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THE

WORKS

OF

FRANCIS BACON,

BARON VERULAM, VISCOUNT ST. ALBAN, AND LORD HIGH CHANCELLOR OF ENGLAND.

VOLUME THE THIRD.

CONTAINING

MISCELLANEOUS WRITINGS

IN

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THE

MYTHOLOGY

OF THE

ANCIENTS,

DECYPHERED AND EXPLAINED.

CRITIQUE

UPON THE

MYTHOLOGY OF THE ANCIENTS.

THE earliest antiquity lies buried in silence and oblivion; excepting the remains we have of it in sacred writ. This silence was succeeded by poetical fables; and these, at length, by the writings we now enjoy: so that the concealed and secret learning of the ancients, seems separated from the history and knowledge of the following ages, by a veil, or partition-wall of fables, interposing between the things that are lost, and those that remain. *

Many may imagine that I am here entering upon a work of fancy, or amusement; and design to use a poetical liberty, in explaining poetical fables. It is true, fables in general are composed of ductile matter, that may be drawn into great variety, by a witty talent, or an inventive genius: and be delivered of plausible meanings which they never contained. But this procedure has already been carried to excess: and great numbers, to procure the sanction of antiquity to their own notions and inventions, have miserably wrested and abused the fables of the ancients.

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* *Varro distributes the ages of the world into three periods; viz. the unknown, the fabulous, and the historical. Of the former we have no accounts but in scripture; for the second, we must consult the ancient poets; such as Hesiod, Homer, or those who wrote still earlier; and then again come back to Ovid, who in his metamorphoses, seems in imitation, perhaps, of some ancient Greek poet, to have intended a complete collection, or a kind of continued and connected history of the fabulous age; especially with regard to changes, revolutions, or transformations.*

Nor is this only a late or unfrequent practice; but of ancient date, and common, even to this day. Thus Chrysippus, like an interpreter of dreams, attributed the opinions of the Stoics to the poets of old: and the chemists, at present, more childishly apply the poetical transformations to their experiments of the furnace. And though I have well weighed and considered all this; and thoroughly seen into the levity which the mind indulges for allegories and allusions; yet I cannot but retain a high value for the ancient mythology. And certainly, it were very injudicious to suffer the fondness and licentiousness of a few, to detract from the honour of allegory and parable in general. This would be rash, and almost prophane: for, since religion delights in such shadows and disguises; to abolish them were, in a manner, to prohibit all intercourse betwixt things divine and human.

Upon deliberate consideration, my judgment is, that a concealed instruction and allegory was originally intended in many of the ancient fables. This opinion may, in some respect, be owing to the veneration I have for antiquity; but more to observing, that some fables discover a great and evident similitude, relation and connection with the thing they signify; as well in the structure of the fable, as in the propriety of the names, whereby the persons or actors are characterized: insomuch, that no one could positively deny a sense and meaning, to be from the first intended, and purposely shadowed out in them. For who can hear, that fame after the giants were destroyed, sprung up as their posthumous sister; and not apply it to the clamour of parties, and the seditious rumours which commonly fly about for a time, upon the quelling of insurrections? Or who can read, how the giant Typhon cut out and carried away Jupiter's sinews; which*

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* *See hereafter, Fab. 7.*

Mercury afterwards stole, and again restored to Jupiter; and not presently observe, that this allegory denotes strong and powerful rebellions; which cut away from kings their sinews, both of money and authority: and that the way to have them restored, is by lenity, affability, and prudent edicts; which soon reconcile, and as it were steal upon the affections of the subject? * *Or who, upon hearing that memorable expedition of the gods against the giants, when the braying of Silenus's ass greatly contributed in putting the giants to flight; does not clearly conceive, that this directly points at the monstrous enterprises of rebellious subjects; which are frequently frustrated and disappointed by vain fears and empty rumours?*

Again, the conformity and purport of the names, is frequently manifest, and self-evident. Thus Metis, the wife of Jupiter, plainly signifies counsel; Typhon, swelling; Pan, universality; Nemesis, revenge, &c. Nor is it a wonder, if sometimes a piece of history, or other things are introduced, by way of ornament; or if the times of the action are confounded; or if part of one fable be tacked to another; or if the allegory be new turned: for all this must necessarily happen; as the fables were the inventions of men who lived in different ages, and had different views; some of them being ancient, others more modern; some having an eye to natural philosophy; † *and others, to morality, or civil policy.*

It may pass for a farther indication of a concealed and secret meaning, that some of these fables are so absurd, and idle, in their narration, as to shew and proclaim an allegory, even afar off. A fable that carries probability with it, may be supposed invented for pleasure, or in imitation of history; but those that could never be conceived, or related in this way,

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* *See hereafter, Fab. 8.*

† *See with regard to natural history and physics, Dr. Hook's Discourse of Earthquakes.*

must surely have a different use. For example, what a monstrous fiction is this, that Jupiter should take Metis to wife; and as soon as he found her pregnant, eat her up; whereby he also conceived, and out of his head brought forth Pallas armed? Certainly no mortal could, but for the sake of the moral it couches, invent such an absurd dream as this; so much out of the road of thought!

But the argument of most weight with me is this; that many of these fables, by no means appear to have been invented by the persons who relate and divulge them; whether Homer, Hesiod, or others: for if I were assured they first flowed from those later times and authors that transmit them to us, I should never expect any thing singularly great or noble from such an origin. But whoever attentively considers the thing, will find that these fables are delivered down, and related by those writers, not as matters then first invented and proposed, but as things received and embraced in earlier ages. Besides, as they are differently related by writers nearly of the same ages, it is easily perceived, that the relators drew from the common stock of ancient tradition; and varied but in point of embellishment, which is their own. And this principally raises my esteem of these fables; which I receive, not as the product of the age, or invention of the poets, but as sacred reliques, gentle whispers, and the breath of better times; that from the traditions of more ancient nations came, at length, into the flutes and trumpets of the Greeks. But, if any one shall, notwithstanding this, contend that allegories are always adventitious, or imposed upon the ancient fables, and no way native, or genuinely contained in them; we might here leave him undisturbed in that gravity of judgment he affects; (though we cannot help accounting it somewhat dull and phlegmatic) and if it were worth the trouble, proceed to another kind of argu-

ent.

Men have proposed to answer two different, and contrary ends, by the use of parable; for parables serve, as well to instruct or illustrate, as to wrap up and envelope: so that though, for the present, we drop the concealed use, and suppose the ancient fables to be vague, undeterminate things, formed for amusement; still the other use must remain, and can never be given up. And every man, of any learning, must readily allow, that this method of instructing is grave, sober, or exceedingly useful; and sometimes necessary in the sciences: as it opens an easy and familiar passage to the human understanding, in all new discoveries that are abstruse, and out of the road of vulgar opinions. Hence, in the first ages, when such inventions and conclusions of the human reason, as are now trite and common, were new and little known; all things abounded with fables, parables, similes, comparisons, and allusions; which were not intended to conceal, but to inform and teach: whilst the minds of men continued rude and unpractised in matters of subtilty and speculation; or even impatient, and in a manner uncapable of receiving such things as did not directly fall under and strike the senses. For as hieroglyphics, were in use before writing; so were parables in use before arguments. And even, to this day, if any man would let new light in upon the human understanding, and conquer prejudice, without raising contests, animosities, opposition, or disturbance, he must still go in the same path, and have recourse to the like method of allegory, metaphor and allusion. *

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* *What use the author has made of this art, will appear to a careful reader of his* de Augmentis Scientiarum *and* Novum Organum. *And though some are of opinion that knowledge is so far improved of late, and men's minds so opened and prepared, that new discoveries, and the naked truth will be best received, when delivered in plain and simple language, without foreign art or ornament; yet he, who acts upon such a supposition,*

To conclude, the knowledge of the early ages was either great or happy; great, if they by design made this use of trope and figure; happy, if whilst they had other views, they afforded matter and occasion to such noble contemplations. Let either be the case, our pains, perhaps, will not be misemployed; whether we illustrate antiquity, or things themselves.

The like indeed has been attempted by others; but to speak ingenuously, their great and voluminous labours have almost destroyed the energy, the efficacy, and grace of the thing, whilst being unskilled in nature, and their learning no more than that of common-place, they have applied the sense of the parables to certain general and vulgar matters, without reaching to their real purport, genuine interpretation, and full depth. For myself, therefore, I expect to appear now in these common things; because, leaving untouched such as are sufficiently plain, and open, I shall drive only at those that are either deep or rich. *

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will perhaps find it erroneous; even though the subject be but of a physical, and not of a moral, political, or religious nature.

* *In effect, the author appears to have judiciously chose his fables, as they were pregnant with useful matter; yet not of the easiest kind to interpret: thus, in his usual way, setting others an example for prosecuting the thing farther; as not having himself exhausted this fruitful subject.*

PHYSICAL MYTHOLOGY.

I.

THE FABLE OF CŒLUM;

EXPLAINED OF THE CREATION, OR ORIGIN OF ALL THINGS.

THE poets relate, that Cœlum was the most ancient of all the gods; that his parts of generation were cut off by his son Saturn; that Saturn had a numerous offspring; but devoured all his sons, as soon as they were born; that Jupiter, at length, escaped the common fate; and when grown up, drove his father Saturn into Tartarus; usurped the kingdom; cut off his father's genitals, with the same knife wherewith Saturn had dismembered Cœlum; and throwing them into the sea, thence sprung Venus.

Before Jupiter was well established in his empire, two memorable wars were made upon him; the first by the Titans, in subduing of whom, Sol, the only one of the Titans who fa-

voured Jupiter, performed him singular service. The second by the giants; who being destroyed and subdued by the thunder and arms of Jupiter, he now reigned secure.

EXPLANATION.

THIS Fable appears to be an enigmatical account of the origin of all things; not greatly differing from the philosophy afterwards embraced by Democritus, who expressly asserts the eternity of matter; but denies the eternity of the world: thereby approaching to the truth of sacred writ, which makes chaos, or un-informed matter, to exist before the six days works.

The meaning of the fable seems to be this: Cœlum denotes the concave space, or vaulted roof that incloses all matter; and Saturn the matter itself; which cuts off all power of generation from his father: as one and the same quantity of matter remains invariable in nature, without addition or diminution. * But the agitations and struggling motions of matter, first

* The original quantity of matter remaining invariably the same, explains that circumstance in the fable, of the same knife being used for the dismembering of Saturn, as had before been used for the dismembering of Cœlum.

produced certain imperfect and ill-joined compositions of things, as it were so many first rudiments, or essays of worlds; till, in process of time, there arose a fabric capable of preserving its form and structure. Whence the first age was shadowed out by the reign of Saturn; who, on account of the frequent dissolutions, and short durations of things, was said to devour his children. And the second age was denoted by the reign of Jupiter; who thrust, or drove those frequent and transitory changes into Tartarus; a place expressive of disorder. This place seems to be the middle space, between the lower heavens, and the internal parts of the earth; wherein disorder, imperfection, mutation, mortality, destruction, and corruption, are principally found.

Venus was not born during the former generation of things, under the reign of Saturn: for whilst discord and jar had the upper hand of concord and uniformity in the matter of the universe, a change of the entire structure was necessary. And in this manner, things were generated and destroyed, before Saturn was dismembered. But when this manner of generation ceased,* there immediately followed another,

* Viz. When Jupiter possessed the throne; or after a durable world was formed. Let the figurative or personify-

brought about by Venus, or a perfect and established harmony of things; whereby changes were wrought in the parts, whilst the universal fabric remained entire and undisturbed. Saturn, however, is said to be thrust out and dethroned, not killed, and become extinct; because agreeably to the opinion of Democritus, the world might relapse into its old confusion and disorder: which Lucretius hoped would not happen in his time.*

But now, when the world was compact, and held together by its own bulk and energy; yet there was no rest from the beginning: for first, there followed considerable motions and disturbances in the celestial regions; though so regulated and moderated by the power of the Sun, prevailing over the heavenly bodies, as to continue the world in its state. Afterwards there followed the like in the lower parts, by inundations, storms, winds, general earthquakes, &c. which, however, being subdued and kept under, there ensued a more peaceable and lasting harmony, and consent of things.

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ing manner of expression, usual among the poets, be all along considered.

* "Quod procul a nobis flectas Fortuna gubernans;
"Et ratio potius, quam Res persuadeas ipsa."

It may be said of this fable, that it includes philosophy; and again, that philosophy includes the fable: for we know, by faith, that all these things are but the oracle of sense, long since ceased and decayed; but the matter and fabric of the world being justly attributed to a creator.*

II.

THE FABLE OF PROMETHEUS;

EXPLAINED OF AN OVER-RULING PROVIDENCE, AND OF HUMAN NATURE.

THE ancients relate that man was the work of Prometheus, and formed of clay; only the artificer mixed in with the mass, particles taken from different animals. And being desirous to improve his workmanship, and endow, as well as create, the human race; he stole up to heaven with a bundle of birch rods, and kindling them at the chariot of the Sun, thence brought down fire to the earth, for the service of men.

They add, that for this meritorious act, Prometheus was repayed with ingratitude by man-

* Next should follow the fable of Pan, explained in the *de Augmentis Scientiarum*; for that fable seems naturally to succeed the present: as the Phenomena of the Universe, come to be considered immediately after its origin.

kind; so that, forming a conspiracy, they accused both him and his invention to Jupiter. But the matter was otherwise received, than they imagined: for the accusation proved extremely grateful to Jupiter, and the gods; insomuch, that delighted with the action, they not only indulged mankind the use of fire; but moreover conferred upon them a most acceptable and desirable present, viz. perpetual youth.

But men, foolishly overjoyed hereat, laid this present of the gods upon an ass, who, in returning back with it, being extremely thirsty, and coming to a fountain, the serpent, who was guardian thereof, would not suffer him to drink, but upon condition of receiving the burden he carried, whatever it should be. The silly ass complied; and thus the perpetual renewal of youth was, for a sup of water, transferred from men to the race of serpents.

Prometheus, not desisting from his unwarrantable practices, though now reconciled to mankind, after they were thus tricked of their present, but still continuing inveterate against Jupiter, had the boldness to attempt deceit, even in a sacrifice; and is said to have once offered up two bulls to Jupiter, but so, as in the hide of one of them, to wrap all the flesh and fat of both, and stuffing out the other hide only with

the bones; then in a religious and devout manner, gave Jupiter his choice of the two. Jupiter detesting this sly fraud and hypocrisy, but having thus an opportunity of punishing the offender, purposely chose the mock bull.

And now giving way to revenge, but finding he could not chastise the insolence of Prometheus, without afflicting the human race, (in the production whereof, Prometheus had strangely and insufferably prided himself,) he commanded Vulcan to form a beautiful and graceful woman; to whom every god presented a certain gift; when she was called Pandora.* They put into her hands an elegant box, containing all sorts of miseries and misfortunes: but hope was placed at the bottom of it. With this box she first goes to Prometheus, to try if she could prevail upon him to receive and open it; but he being upon his guard, warily refused the offer. Upon this refusal, she comes to his brother, Epimetheus, a man of a very different temper, who rashly and inconsiderately opens the box. When finding all kinds of miseries and misfortunes issued out of it, he grew wise too late; and with great hurry and struggle endeavoured to clap the cover on again: but with all his endeavour,

* As if it were all gift.

could scarce keep in Hope, which lay at the bottom.

Lastly, Jupiter arraigned Prometheus of many heinous crimes; as that he formerly stole fire from heaven; that he contemptuously, and deceitfully, mocked him by a sacrifice of bones; that he despised his present; * adding withal a new crime, that he attempted to ravish Pallas: for all which, he was sentenced to be bound in chains, and doomed to perpetual torments. Accordingly, by Jupiter's command, he was brought to Mount Caucasus, and there fastened to a pillar, so firmly, that he could no way stir. A vulture, or eagle stood by him, which in the day-time gnawed and consumed his liver; but in the night the wasted parts were supplied again: whence matter for his pain was never wanting.

They relate, however, that his punishment had an end; for Hercules sailing the ocean, in a cup, or pitcher, presented him by the Sun, came at length to Caucasus; shot the eagle with his arrows; and set Prometheus free. In certain nations also there were instituted particular games of the Torch, to the honour of Prometheus; in which they, who run for the prize, carried lighted torches; and as any one of these torches hap-

* Viz. that by Pandora.

pened to go out, the bearer withdrew himself, and gave way to the next; and that person was allowed to win the prize, who first brought in his lighted torch to the goal.

EXPLANATION.

THIS fable contains and enforces many just and serious considerations; some whereof have been, long since, well observed; but some again remain perfectly untouched. Prometheus clearly and expressly signifies Providence; for of all the things in nature, the formation and endowment of man was singled out by the ancients, and esteemed the peculiar work of Providence. The reason hereof seems, 1. That the nature of man includes a mind and understanding, which is the seat of Providence; 2. That it is harsh and incredible, to suppose reason and mind should be raised, and drawn out of senseless and irrational principles; whence it become almost inevitable, that providence is implanted in the human mind; in conformity with, and by the direction and the design of the greater over-ruling Providence. But, 3. The principal cause is this; that man seems to be the thing, in which the whole world centers, with respect to final causes; so that if he were away, all other things would stray and fluctuate, without end or inten-

tion; or become perfectly disjoined, and out of frame. For all things are made subservient to man; and he receives use and benefit from them all. Thus the revolutions, places, and periods, of the celestial bodies, serve him for distinguishing times and seasons; and for dividing the world into different regions: the meteors afford him prognostications of the weather; the winds sail our ships, drive our mills, and move other machines; and the vegetables and animals of all kinds, either afford us matter for houses and habitations, cloathing, food, physic, or tend to ease, or delight, support, or refresh us: so that every thing in nature seems not made for itself, but for man.

And it is not without reason added, that the mass of matter, whereof man was formed, should be mixed up with particles taken from different animals, and wrought in with the clay; because, it is certain, that of all things in the universe, man is the most compounded, and recompounded body; so that the ancients not improperly styled him a Microcosm, or little world within himself. For although the chemists have absurdly, and too literally, wrested and perverted the elegance of the term microcosm, whilst they pretend to find all kind of mineral and vegetable matters, or something corresponding to them

in man; yet it remains firm and unshaken, that the human body is of all substances the most mixed, and organical: whence it has surprizing powers and faculties. For the powers of simple bodies are but few, though certain and quick; as being little broken, or weakened; and not counterballanced by mixture: But excellence, and quantity of energy, reside in mixture and composition.*

Man, however, in his first origin, seems to be a defenceless, naked creature; slow in assisting himself, and standing in need of numerous things. Prometheus, therefore, hastened to the invention of fire, which supplies and administers to nearly all human uses and necessities; insomuch, that if the soul may be called the form of forms; if the hand may be called the instrument of instruments; fire may, as properly, be called the assistant of assistants, or the helper of helps. For hence proceed numberless operations; hence all the mechanic arts; and hence infinite assistances are afforded to the sciences themselves.

The manner wherein Prometheus stole this fire, is properly described from the nature of the

* The instances of this position deserve to be collected. Consider of the mechanical powers, Medicines, poisons, plants, companies, government, arts, the advancement of philosophy, &c.

thing: he being said to have done it by applying a rod of birch, to the chariot of the Sun: for birch is used in striking and beating; which clearly denotes the generation of fire to be from the violent percussions, and collisions of bodies; whereby the matters struck are subtilized, rarified, put into motion, and so prepared to receive the heat of the celestial bodies; whence they, in a clandestine and secret manner, collect and snatch fire, as it were by stealth, from the chariot of the Sun. *

The next is a remarkable part of the fable; which represents, that men, instead of gratitude and thanks, fell into indignation and expostulation; accusing both Prometheus and his fire to Jupiter: and yet the accusation proved highly pleasing to Jupiter; so that he, for this reason, crowned these benefits of mankind, with a new bounty. Here it may seem strange, that the sin of ingratitude to a Creator and Benefactor; a sin so heinous as to include almost all others; should meet with approbation and reward. But the allegory has another view; and denotes, that the accusation and arraignment both of human na-

* See the Author's example of an enquiry into the form of heat, in the *Novum Organum* Part II. Sect. I. See also chapter of fire in Boerhaave's Chemistry.

ture, and human art, among mankind, proceeds from a most noble and laudable temper of the mind; and tends to a very good purpose: whereas the contrary temper is odious to the gods; and unbeneficial in itself. For they who break into extravagant praises of human nature, and the arts in vogue, lay themselves out in admiring the things they already possess, and will needs have the sciences cultivated among them, to be thought absolutely perfect and complete; in the first place, show little regard to the Divine Nature: whilst they extol their own inventions, almost as high as his perfection. In the next place, men of this temper are unserviceable and prejudicial in life; whilst they imagine themselves already got to the top of things, and there rest, without farther enquiry. On the contrary, they who arraign and accuse both nature and arts, and are always full of complaints against them, not only preserve a more just and modest sense of mind, but are also perpetually stirred up to fresh industry, and new discoveries. Is not, then, the ignorance and fatality of mankind to be extremely pitied, whilst they remain slaves to the arrogance of a few of their own fellows; and are doatingly fond of that scrap of Grecian knowledge, the Peripatetic philosophy; and this to such a degree, as no

only to think all accusation or arraignment thereof useless, but even hold it suspect and dangerous? Certainly, the procedure of Empedocles, though furious; but especially that of Democritus (who with great modesty complained, that all things were abstruse; that we know nothing; that truth lies hid in deep pits; that falsehood is strangely joined and twisted along with truth, &c.) is to be preferred before the confident, assuming, and dogmatical, school of Aristotle.* Mankind are, therefore, to be admonished, that the arraignment of nature, and of art, is pleasing to the gods; and that a sharp and vehement accusation of Prometheus, though a creator, a founder, and a master, obtained new blessings and presents from the Divine Bounty; and proved more sound and serviceable than a diffusive harangue of praise and gra-

* The address of the author may here deserve to be observed. What he is forced on many occasions to stifle, or at most to speak only by halves, for fear of offending; he here openly avouches, in a manner that is scarce liable to exception. Indeed, he appears to have chose the present subject, the rather because the course and nature of decyphering the mythology of the ancients, would give him an opportunity of freely, or less offensively expressing his sentiments, for the improvement of arts and sciences, and the general advantage of mankind.

tulation. And let men be assured, that a fond opinion they have already acquired enough, is a principal reason why they have acquired so little. *

That the perpetual flower of youth should be the present which mankind received as a reward for their accusation, carries this moral; that the ancients seem not to have despaired of discovering methods, and remedies, for retarding old age, and prolonging the period of human life; but rather reckoned it among those things which, through sloth and want of diligent enquiry, perish and come to nothing, after having been once undertaken, than among such as are absolutely impossible, or not placed within the reach of the human power. For they signify, and intimate, from the true use of fire, and the just and strenuous accusation, and conviction of the errors of art, that the divine Bounty is not

* Certainly few appear sensible, what a number of great things are still wanting in philosophy, for the accommodation of human life; or even to prevent dreadful calamities; such as happen by fire, water, storms, &c. Things wherein men seem either quite regardless, or confounded; as if they had no faculties for procuring a command over nature in these particulars. And to examine it closely, we shall perhaps find the moral and political world subject to their calamities, no less than the physical.

wanting to men in such kind of presents, but that men indeed are wanting to themselves; and lay such an inestimable gift upon the back of a slow-paced ass: that is, upon the back of the heavy, dull, lingering thing, experience; from whose sluggish and tortoise-pace proceeds that ancient complaint of the shortness of life, and the slow advancement of arts. * And certainly it may well seem, that the two faculties of reasoning and experience, are not hitherto properly joined, and coupled together; but to be still new gifts of the gods, separately laid, the one upon the back of a light bird, or abstract philosophy; and the other upon an ass, or slow-paced practice and trial. And yet good hopes might be conceived of this ass; if it were not for his thirst, and the accidents of the way. For we judge, that if any one would constantly proceed, by a certain law and method, in the road of experience; and not by the way, thirst after such experiments as make for profit or ostentation †; nor exchange his burden, or quit the original design, for the sake of those; ‡ he

* Se the Introduction to the History of Life and Death.

† See the fable of Atalanta, Fab. V.

‡ As almost the whole body of mankind, both philosophers and others, seem to have done.

might be an useful bearer of a new and accumulated divine Bounty to mankind. *

That this gift of perpetual youth should pass from men to serpents, seems added by way of ornament, and illustration to the fable; † perhaps, intimating, at the same time, the shame it is for men, that they, with their fire, and numerous arts, cannot procure to themselves those things which nature has bestowed upon many other creatures. ‡

The sudden reconciliation of Prometheus to mankind, after being disappointed of their hopes, contains a prudent and useful admonition. It points out the levity and temerity of men in new experiments; which, not presently succeeding, or answering to expectation, men precipitantly quit their new undertakings, hurry back to their old ones, and grow reconciled thereto. ‖

After the fable has described the state of man, with regard to arts and intellectual matters, it

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* See the author's method of learned experience; *de Augment. Scientiar.*

† See Introduction.

‡ See the author's History of Life and Death.

‖ Which is one principal reason of the slow advancement of arts.

passes on to religion: for after the inventing and settling of arts, follows the establishment of divine worship; which hypocrisy presently enters into, and corrupts. So that by the two sacrifices we have elegantly painted the person of a man truly religious, and of an hypocrite. One of these sacrifices contained the fat, or the portion of God, used for burning and incensing; thereby denoting affection and zeal, incensed up to his glory. It likewise contained the bowels, which are expressive of charity; along with the good and useful flesh. But the other contained nothing more than dry bones; which nevertheless stuffed out the hide, so as to make it resemble a fair, beautiful, and magnificent sacrifice; hereby finely denoting the external and empty rites and barren ceremonies, wherewith men burden and stuff out the divine worship: Things rather intended for show and ostentation, than conducing to piety. Nor are mankind simply content with this mock-worship of God, but also impose and father it upon him, as if he had chose and ordained it. Certainly the prophet, in the person of God, has a fine expostulation, as to this matter of choice. Is this the fasting which I have chosen, that a man should afflict his soul for a day; and bow down his head like a bulrush?

After thus touching the state of religion, the fable next turns to manners, and the conditions of human life. And though it be a very common, yet is it a just interpretation, that Pandora denotes the pleasures and licentiousness, which the cultivation and luxury of the arts of civil life introduce, as it were, by the instrumental efficacy of fire: whence the works of the voluptuary arts are properly attributed to Vulcan, the God of Fire. And hence infinite miseries and calamities have proceeded to the minds, the bodies, and the fortunes of men, together with a late repentance; and this not only in each man's particular, but also in kingdoms and states: for wars and tumults, and tyrannies, have all arisen from this same fountain, or box of Pandora.

It is worth observing, how beautifully, and elegantly, the fable has drawn two reigning characters in human life; and given two examples, or tablatures of them, under the persons of Prometheus, and Epimetheus. The followers of Epimetheus are improvident; see not far before them; and prefer such things as are agreeable for the present; whence they are oppressed with numerous straits, difficulties, and calamities; with which they almost continually struggle: but in the mean time gratify their own

temper; and, for want of a better knowledge of things, feed their minds with many vain hopes: and as with so many pleasing dreams, delight themselves, and sweeten the miseries of life.

But the followers of Prometheus are the prudent, wary men, that look into futurity, and cautiously guard against, prevent, and undermine many calamities and misfortunes. But this watchful, provident temper is attended with a deprivation of numerous pleasures, and the loss of various delights; whilst such men debar themselves the use even of innocent things: and what is still worse, rack and torture themselves with cares, fears, and disquiets; being bound fast to the pillar of necessity, and tormented with numberless thoughts (which for their swiftness are well compared to an eagle) that continually wound, tear, and gnaw their liver, or mind, unless, perhaps, they find some small remission by intervals, or as it were at nights: but then new anxieties, dreads, and fears, soon return again, as it were in the morning. And therefore, very few men, of either temper, have secured to themselves the advantages of providence, and kept clear of disquiets, troubles, and misfortunes.

Nor indeed can any man obtain this end, without the assistance of Hercules; that is, of such

fortitude and constancy of mind, as stands prepared against every event, and remains indifferent to every change; looking forward without being daunted; enjoying the good without disdain; and enduring the bad without impatience. And it must be observed, that even Prometheus had not the power to free himself; but owed his deliverance to another: for no natural, inbred force and fortitude could prove equal to such a task. The power of releasing him came from the utmost confines of the ocean, and from the sun; that is, from Apollo, or knowledge; and again, from a due consideration of the uncertainty, instability, and fluctuating state of human life; which is aptly represented by sailing the ocean. Accordingly Virgil has prudently joined these two together; accounting him happy who knows the causes of things, and has conquered all his fears, apprehensions, and superstitions. *

It is added, with great elegance, for supporting and confirming the human mind, that the great hero who thus delivered him, sailed the ocean in a cup or pitcher; to prevent the fear, or complaint, as if, through the narrowness of

* "Felix qui potuit rerum cognoscere Causas,
"Quique metus omnes & inexorabile Fatum
"Subjecit pedibus, strepitumque Acherontis avari."

our nature, or a too great fragility thereof, we were absolutely incapable of that fortitude and constancy, to which Seneca finely alludes, when he says, " It is a noble thing, at once to partici- " pate the frailty of man, and the security of " a God."

We have hitherto, that we might not break the connexion of things, designedly omitted the last crime of Prometheus, that of attempting the chastity of Minerva; which heinous offence, it doubtless was, that caused the punishment of having his liver gnawed by the vulture. The meaning seems to be this; that when men are puffed up with arts and knowledge, they often try to subdue even the divine wisdom; and bring it under the dominion of sense and reason: whence inevitably follows a perpetual, and restless, rending and tearing of the mind. A sober and humble distinction must, therefore, be made betwixt divine and human things; and betwixt the oracles of sense and faith; unless mankind had rather chuse an heretical religion, and a fictitious and romantic philosophy. *

The last particular in the fable is the Games of the torch, instituted to Prometheus; which

* See *de Augmentis Scientiarum*, Sec. XXVIII. and Supplem. XV.

again relates to arts and sciences, as well as the invention of fire, for the commemoration and celebration whereof, these games were held. And here we have an extremely prudent admonition, directing us to expect the perfection of the sciences from succession; and not from the swiftness and abilities of any single person: for he who is fleetest and strongest in the course, may perhaps be less fit to keep his torch alight, since there is danger of its going out from too rapid, as well as from too slow a motion.* But this kind of contest with the torch seems to have been long dropt, and neglected; the sciences appearing to have flourished principally in their first authors, as Aristotle; Galen, Euclid, Ptolemy, &c. whilst their successors have done very little, or scarce made any attempts. But it were highly to be wished, that these games might be renewed, to the honour of Prometheus, or human nature; and that they might excite contest, emulation, and laudable endeavours; and the design meet with such success, as not to hang tottering, tremulous, and hazarded, upon the torch of any single person.†

* This matter is abundantly explained in the *de Augmentis*, and *Novum Organum*.

† The author here seems to have had himself in view; as being the only restorer or promoter of these games, in hi

Mankind, therefore, should be admonished to rouze themselves, and try and exert their own strength and chance; and not place all their dependance upon a few men, whose abilities and capacities, perhaps, are not greater than their own.

These are the particulars which appear to us shadowed out by this trite and vulgar fable; though without denying that there may be contained in it several intimations that have a surprizing correspondence with the christian mysteries. In particular, the voyage of Hercules, made in a pitcher, to release Prometheus, bears an allusion to the word of God, coming in the frail vessel of the flesh to redeem mankind. But we indulge ourselves no such liberties as these; for fear of using strange fire at the altar of the Lord. *

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time. See the doctrine of the Traditive Lamp, in the *de Augmentis Scientiarum.*

* This fable, and its explanation may deserve to be read again and again, as a little system of physics, morality, religion, and all kinds of learning. And perhaps the full interpretation and elegance of the whole can scarce be perceived, without having frequent recourse from the parts of the explanation to the corresponding parts of the fable.

III.

THE FABLE OF ORPHEUS;

EXPLAINED OF NATURAL AND MORAL PHILOSOPHY.

INTRODUCTION.

THE fable of Orpheus, though trite and common, has never been well interpreted; and seems to hold out a picture of universal philosophy: for to this sense may be easily transferred what is said of his being a wonderful and perfectly divine person, skilled in all kinds of harmony, subduing and drawing all things after him by sweet and gentle methods and modulations. For the labours of Orpheus exceed the labours of Hercules, both in power and dignity; as the works of knowledge exceed the works of strength.

FABLE.

ORPHEUS having his beloved wife snatched from him by sudden death, resolved upon descending to the infernal regions, to try if, by the power of his harp, he could re-obtain her. And in effect, he so appeased and soothed the infernal powers by the melody and sweetness of his harp and voice, that they indulged him the

liberty of taking her back; on condition that she should follow him behind, and he not turn to look upon her 'till they came into open day: But he, through the impatience of his care and affection, and thinking himself almost past danger, at length looked behind him; whereby the condition was violated, and she again precipitated to Pluto's regions. From this time Orpheus grew pensive and sad, a hater of the sex, and went into solitude; where, by the same sweetness of his harp and voice, he first drew the wild beasts of all sorts about him; so that, forgetting their natures, they were neither actuated by revenge, cruelty, lust, hunger, or the desire of prey; but stood gazing about him, in a tame and gentle manner; listening attentively to his music. Nay, so great was the power and efficacy of his harmony, that it even caused the trees and stones to remove, and place themselves, in a regular manner, about him. When he had for a time, and with great admiration, continued to do this, at length the Thracian women, raised by the instigation of Bacchus, first blew a deep and hoarse-sounding horn, in such an outrageous manner, that it quite drowned the music of Orpheus. And thus the power, which, as the link of their society, held all things in order, being dissolved, disturbance reigned

anew; each creature returned to its own nature; and pursued and preyed upon its fellow, as before. The rocks and woods also started back to their former places; and even Orpheus himself was at last torn to pieces by these female furies, and his limbs scattered all over the desart. But, in sorrow and revenge for his death, the river Helicon, sacred to the muses, hid its waters under ground, and rose again in other places.

EXPLANATION.

The fable receives this explanation. The music of Orpheus is of two kinds; one that appeases the infernal powers, and the other that draws together the wild beasts and trees. The former properly relates to natural, and the latter to moral philosophy, or civil society. The re-instatement and restoration of corruptible things, is the noblest work of natural philosophy; and, in a less degree, the preservation of bodies in their own state, or a prevention of their dissolution and corruption. And if this be possible, it can certainly be effected no other way than by proper and exquisite attemperations of nature; as it were by the harmony and

fine touching of the harp.* But as this is a thing of exceeding great difficulty, the end is seldom obtained; and that, probably, for no reason more than a curious and unseasonable impatience and solicitude.†

And therefore philosophy being almost unequal to the task, has cause to grow sad; and hence betakes itself to human affairs, insinuating into men's minds the love of virtue, equity and peace, by means of eloquence and persuasion: thus forming men into societies; bringing them under laws and regulations; and making them forget their unbridled passions and affections, so long as they hearken to precepts, and submit to discipline. And thus they soon after build themselves habitations, form cities, cultivate lands, plant orchards, gardens, &c. So

* Without an allegory, by discovering and acting according to the laws of nature; as those of attraction, gravitation, motion, separation, mixture, preservation, putrefaction, regeneration, &c. See the *Sylva Sylvarum*, and the History of Life and Death.

† Men being eager to see the end of natural philosophy, without having patience to pursue the means: for the laws of nature are not easily found; especially in that preposterous and absurd manner, by reasoning and speculation, without proper trials, and experimental enquiries.

that they may not improperly be said to remove and call the trees and stones together.

And this regard to civil affairs, is justly and regularly placed after diligent trial made for restoring the mortal body; the attempt being frustrated in the end: because the unavoidable necessity of death, thus evidently laid before mankind, animates them to seek a kind of eternity by works of perpetuity, character, and fame.

It is also prudently added, that Orpheus was afterwards averse to women and wedlock, because the indulgence of a married state, and the natural affections which men have for their children, often prevent them from entering upon any grand, noble, or meritorious enterprize for the public good;* as thinking it sufficient to obtain immortality by their descendants, without endeavouring at great actions.

And even the works of knowledge, though the most excellent among human things, have their periods; for after kingdoms and commonwealths have flourished for a time, disturbances, seditions and wars, often arise: in the din whereof, first the laws are silent, and not heard;†

* See the Essay on Marriage and single life.

† Here lies the allegory of the deep-sounding horn, mentioned in the fable.

and then men return to their own depraved natures: whence cultivated lands and cities soon become desolate and waste. And if this disorder continues, learning and philosophy is infallibly torn to pieces; so that only some scattered fragments thereof can afterwards be found up and down, in a few places, like planks after a shipwreck. And barbarous times succeeding, the river Helicon dips under ground; that is, letters are buried, till things having undergone their due course of changes, learning rises again, and shews its head; though seldom in the same place, but in some other nation. *

* Thus we see that Orpheus denotes learning; Eurydice, things, or the subject of learning; Bacchus, and the Thracian women, men's ungoverned passions and appetites, &c. And in the same manner, these fables might be familiarly illustrated, and brought down to the capacities of children, who usually learn them in an unscientifical manner at school.

IV.

THE FABLE OF ATALANTA AND HIPPOMENES;

EXPLAINED OF THE CONTEST BETWIXT ART AND NATURE.

ATALANTA, who was exceeding fleet, contended with Hippomenes in the course, on condition, that if Hippomenes won, he should espouse her, or forfeit his life, if he lost. The match was very unequal; for Atalanta had conquered numbers, to their destruction. Hippomenes, therefore, had recourse to stratagem. He procured three golden apples; and purposely carried them with him: they started; Atalanta out-stripped him soon; then Hippomenes bowled one of his apples before her, a-cross the course, in order, not only to make her stoop, but to draw her out of the path. She, prompted by female curiosity, and the beauty of the golden fruit, starts from the course to take up the apple. Hippomenes, in the mean time, holds on his way, and steps before her; but she, by her natural swiftness, soon fetches up her lost ground, and leaves him again behind. Hippomenes however, by rightly timing his second and third throw, at length, won the race; not by his swiftness, but his cunning.

EXPLANATION.

THIS fable seems to contain a noble allegory of the contest betwixt art and nature. For art, here denoted by Atalanta, is much swifter, or more expeditious, in its operations than nature, when all obstacles and impediments are removed, and sooner arrives at its end. This appears almost in every instance. Thus fruit comes slowly from the kernel, but soon by inoculation or incision: Clay, left to itself, is a long time in acquiring a stony hardness; but is presently burnt by fire into brick. * So again in human life, nature is a long while in alleviating and abolishing the remembrance of pain, and assuaging the troubles of the mind; but moral philosophy, which is the art of living, performs it presently. Yet this prerogative and singular efficacy of art, is stopt and retarded, to the infinite detriment of human life, by certain golden apples: for there is no one science, or art, that constantly holds on its true and proper course to the end; but they are all continually stopping short, forsaking the track, and turning

* A proper collection of these instances should be made for the encouragement of men in their endeavours to advance arts, and produce considerable effects.

aside to profit and convenience; exactly like Atalanta. Whence, it is no wonder that art gets not the victory over nature; nor, according to the condition of the contest, brings her under subjection: but, on the contrary, remains subject to her, as a wife to a husband. *

* The author in all his physical works, proceeds upon this foundation; that it is possible, and practicable, for art to obtain the victory over nature; that is, for human industry and power to procure, by the means of proper knowledge, such things as are necessary to render life as happy and commodious as its mortal state will allow: For instance, that it is possible to lengthen the present period of human life; bring the winds more under command, and every way extend and enlarge the dominion, or empire, of man over the works of nature. And let no one fearfully apprehend, that there is danger in thus endeavouring to take the reins of government out of nature's hands, and putting them into the weak hands of men: for the distinction betwixt men and nature, is imaginary, and only made to help the understanding; man himself being necessarily subject to the laws of nature: though within the compass of these laws he has a very extensive power, that will always be commensurate to knowledge.

V.

THE FABLE OF ERICTHONIUS;

EXPLAINED OF THE IMPROPER USE OF FORCE IN NATURAL PHILOSOPHY.

THE poets feign that Vulcan attempted the chastity of Minerva; and impatient of refusal, had recourse to force: but in the struggle, his semen fell upon the ground, and produced Ericthonius; whose body from the middle upwards was comely, and well proportioned; but his thighs and legs, small, shrunk, and deformed, like an eel. Conscious of this defect, he became the inventor of chariots; so as to shew the graceful, but conceal the deformed part of his body.

EXPLANATION.

THIS strange and monstrous fable seems to carry this meaning. Art is here represented under the person of Vulcan; by reason of the various uses it makes of fire: and nature under the person of Minerva; by reason of the industry employed in her works. Art, therefore, whenever it offers violence to nature, in order to conquer, subdue, and bend her to its purpose, by tortures and force of all kinds, seldom

obtains the end proposed: Yet upon great struggle and application, there proceed certain imperfect births, or lame abortive works; specious in appearance, but weak and unstable in use: which are, nevertheless, with great pomp, and deceitful appearances, triumphantly carried about, and shewn by impostors. A procedure very familiar, and remarkable, in chemical productions, and new mechanical Inventions; especially when the inventors rather hug their errors, than improve upon them, and go on struggling with nature, not courting her, in the proper obsequious manner, for an intimate embrace. *

* It is a fundamental position with the author, that nature, like the ladies, can only be won by submission. See the *Novum Organum*.

VI.

THE FABLE OF ICARUS, AND THAT OF SCYLLY AND CHARYBDIS;

EXPLAINED OF MEDIOCRITY IN NATURAL AND MORAL PHILOSOPHY.

MEDIOCRITY, or the holding of a middle course, has been highly extolled in morality; but little in matters of science, though no less useful and proper here; whilst in politics it is held suspected, or to be employed with judgment. The ancients described mediocrity in manners, by the course prescribed to Icarus; and in matters of the understanding, by the steering betwixt Scilla and Charibdis, on account of the great difficulty and danger in passing those streights.

Icarus, being to fly across the sea, was ordered by his father neither to soar too high, nor fly too low; for as his wings were fastened together with wax, there was danger of its melting by the sun's heat in too high a flight; and of its becoming less tenacious by the moisture, if he kept too near the vapour of the sea. But he, with a juvenile confidence, soars aloft, and fell down headlong.

EXPLANATION.

The fable is vulgar, and easily interpreted; for the path of virtue lies strait, between excess on the one side, and defect on the other. And no wonder that excess should prove the bane of Icarus, exulting in juvenile strength and vigour: for excess is the natural vice of youth; as defect is that of old age. And if a man must perish by either, Icarus chose the better of the two; for all defects are justly esteemed more depraved than excesses. There is some magnanimity in excess, that, like a bird, claims kindred with the heavens: but defect is a reptile, that basely crawls upon the earth. It was excellently said by Heraclitus; "A dry light makes "the best soul;" for if the soul contracts moisture from the earth, it perfectly degenerates and sinks. On the other hand, moderation must be observed, to prevent this fine light from burning, by its too great subtilty and dryness. But these observations are common.

In matters of the understanding it requires great skill, and a particular felicity, to steer clear of Scylla and Charybdis. If the ship strikes upon Scylla, it is dashed in pieces against the rocks: if upon Charybdis, it is swallowed

outright. This allegory is pregnant with matter; but we shall only observe the force of it lies here, that a mean be observed in every doctrine and science, and in the rules and axioms thereof, between the rocks of distinctions, and the whirlpools of universalities: for these two are the bane and shipwreck of fine geniuses and arts. *

* For arts are founded on particulars, as we see in the arts of paper, sugar, gunpowder, &c. so that generals let arts slip through them: and subtile distinctions and divisions split and grind nature so far, as to render the objects unfit for the hand, the sense, or even the understanding to work with, to advantage. Hence those fruitless and barren speculations of the schoolmen; the infinite divisibility of matter; and mathematical notions, and metaphysical powers introduced into physic.

VII.

THE FABLE OF PROTEUS;

EXPLAINED OF MATTER AND ITS CHANGES.

PROTEUS, according to the poets, was Neptune's herdsman; an old man, and a most extraordinary prophet; who understood things past and present as well as future; so that besides the business of divination, he was the revealer and interpreter of all antiquity, and secrets of every kind. He lived in a vast cave; where his custom was to tell over his herd of sea-calves at noon, and then to sleep. Whoever consulted him, had no other way of obtaining an answer, but by binding him with manacles and fetters; when he, endeavouring to free himself, would change into all kinds of shapes and miraculous forms; as of fire, water, wild beasts, &c. till at length he resumed his own shape again.

EXPLANATION.

THIS fable seems to point at the secrets of nature, and the states of matter. For the person of Proteus denotes matter, the oldest of all things, after God himself;* that resides, as in

* Proteus properly signifies primary, oldest, or first.

a cave, under the vast concavity of the heavens. He is represented as the servant of Neptune; because the various operations and modifications of matter, are principally wrought in a fluid state. The herd, or flock of Proteus, seems to be no other than the several kinds of animals, plants, and minerals, in which matter appears to diffuse and spend itself; so that after having formed these several species, and as it were finished its task, it seems to sleep and repose, without otherwise attempting to produce any new ones. And this is the moral of Proteus's counting his herd, then going to sleep.

This is said to be done at noon, not in the morning or evening; by which is meant the time best fitted and disposed for the production of species; from a matter duly prepared, and made ready before-hand, and now lying in a middle state, between its first rudiments and decline: which, we learn from sacred history, was the case at the time of the creation; when, by the efficacy of the divine command, matter directly came together, without any transformation or intermediate changes, which it affects; instantly obeyed the order, and appeared in the form of creatures.

And thus far the fable reaches of Proteus, and his flock, at liberty and unrestrained. For

the universe, with the common structures and fabrics of the creatures, is the face of matter, not under constraint, or as the flock wrought upon, and tortured, by human means. But if any skilful minister of nature shall apply force to matter, and by design torture and vex it, in order to its annihilation, it, on the contrary, being brought under this necessity, changes and transforms itself into a strange variety of shapes and appearances; for nothing but the power of the Creator can annihilate, or truly destroy it: so that at length, running through the whole circle of transformations, and compleating its period, it in some degree restores itself, if the force be continued. And that method of binding, torturing, or detaining, will prove the most effectual and expeditious, which makes use of manacles and fetters; that is, lays hold and works upon matter in the extremest degrees.*

The addition in the fable that makes Proteus a prophet, who had the knowledge of things past, present, and future, excellently agrees with the nature of matter; as he who knows the pro-

* The author has proposed a certain method of working in this manner, by means of a new engine, or particular digester applied to the fire. See *Sylva Sylvarum*, and the History of Rarity and Density.

perties, the changes, and the processes of matter, must, of necessity, understand the effects and sum of what it does, has done, or can do; though his knowledge extends not to all the parts and particulars thereof. *

VIII.

THE FABLE OF CUPID;

EXPLAINED OF THE CORPUSCULAR PHILOSOPHY.

THE particulars related by the poets of Cupid, or love, do not properly agree to the same person, yet they differ only so far, that if the confusion of persons be rejected, the correspondence may hold. They say, that love was the most ancient of all the gods, and existed before every thing else, except chaos, which is held coeval therewith. But for chaos, the ancients never paid divine honours, nor gave the title of a God thereto. Love is represented absolutely without progenitor, excepting only that he is said to have proceeded from the egg of Nox; but that himself begot the gods, and all things else, on chaos. His attributes are four; viz. 1.

* See fable IV. See also the *Novum Organum*, Part II. Aph. 1. 2, 3, 4, 5, &c.

perpetual infancy, 2. blindness, 3. nakedness, and 4. archery.

There was also another Cupid, or love, the youngest son of the Gods, born of Venus; and upon him the attributes of the elder are transferred, with some degree of correspondence.

EXPLANATION.

THIS fable points at, and enters, the cradle of nature. Love seems to be the appetite, or incentive, of the primitive matter; or, to speak more distinctly, the natural motion, or moving principle, of the original corpuscles, or atoms: this being the most ancient and only power that made and wrought all things out of matter. It is absolutely without parent, that is, without cause: for causes are as parents to effects: but this power or efficacy could have no natural cause; for, excepting God, nothing was before it: and therefore it could have no efficient in nature. And as nothing is more inward with nature, it can neither be a genus nor a form; and therefore, whatever it is, it must be somewhat positive, though inexpressible. And if it were possible to conceive its modus and process, yet it could not be known from its cause, as being, next to God, the cause of causes, and itself without a cause. And perhaps we are not to

hope that the modus of it should fall, or be comprehended, under human enquiry. Whence it is properly feigned to be the egg of Nox, or laid in the dark. *

The divine philosopher declares, that "God has made every thing beautiful in its season; and has given over the world to our disputes and enquiries: but that man cannot find out the work which God has wrought, from its beginning up to its end." Thus the summary or collective law of nature, or the principle of love, impressed by God upon the original particles of all things, so as to make them attack each other and come together, by the repetition and multiplication whereof, all the variety in the universe is produced, can scarce possibly find full admittance into the thoughts of men; though some faint notion may be had thereof. The Greek philosophy is subtile, and busied in discovering the material principles of things; but negligent and languid in discovering the principles of motion, in which the energy and efficacy of every operation consists. And here the Greek

* Let it be examined what approximations have been made by the modern philosophers to the investigation of this principle; in their doctrines, calculations, and attempts, to assign the cause of gravity.

philosophers seem perfectly blind and childish: for the opinion of the Peripatetics, as to the stimulus of matter, by privation, is little more than words; or rather sound than signification. And they who refer it to God, though they do well therein, yet they do it by a start, and not by proper degrees of assent: for doubtless there is one summary, or capital law, in which nature meets, subordinate to God; viz. the law mentioned in the passage above quoted from Solomon; or the work which God has wrought from its beginning up to its end. *

Democritus, who farther considered this subject, having first supposed an atom, or corpuscle, of some dimension or figure, attributed thereto one appetite, desire, or first motion simply; and another comparatively: imagining that all things properly tended to the centre of the world; those containing more matter falling faster to the center, and thereby removing, and in the shock driving away, such as held less. But this is a slender conceit, and regards too few particulars; for neither the revolutions of the celestial bodies, nor the contractions and expansions of things, can be reduced to this principle. And

* Viz. The chain of causes and effects, traced gradually up to its last link; where philosophy ends: but not before it has discovered every intermediate link.

for the opinion of Epicurus, as to the declination and fortuitous agitation of atoms, this only brings the matter back again to a trifle, and wraps it up in ignorance and night.

Cupid is elegantly drawn a perpetual child: for compounds are larger things, and have their periods of age; but the first seeds or atoms of bodies are small, and remain in a perpetual infant state.*

He is again justly represented naked; as all compounds may properly be said to be dressed and cloathed, or to assume a personage; whence nothing remains truely naked, but the original particles of things.

The blindness of Cupid, contains a deep allegory; for this same Cupid, love, or appetite of the world, seems to have very little foresight; but directs his steps and motions conformably to what he finds next him; as blind men do when they feel out their way: which renders the divine and over-ruling Providence and foresight the more surprizing: as by a certain steady law, it brings such a beautiful order, and regularity, of things out of what seems extremely casual, void of design, and as it were really blind.

The last attribute of Cupid is archery; viz. a

* See Sir Isaac Newton of the original particles of matter, in the queries at the end of his optics.

virtue or power operating at a distance: for every thing that operates at a distance, may seem, as it were, to dart, or shoot with arrows. And whoever allows of atoms and vacuity, necessarily supposes that the virtue of atoms operates at a distance; for without this operation, no motion could be excited, on account of the vacuum interposing; but all things would remain sluggish and unmoved.

As to the other Cupid, he is properly said to be the youngest son of the gods, as his power could not take place before the formation of species, or particular bodies. The description given us of him transfers the allegory to morality, though he still retains some resemblance with the ancient Cupid: for as Venus universally excites the affection of association, and the desire of procreation, her son Cupid applies the affection to individuals: so that the general disposition proceeds from Venus, but the more close sympathy from Cupid. The former depends upon a near approximation of causes; but the latter upon deeper, more necessitating and uncontrolable principles, as if they proceeded from the ancient Cupid, on whom all exquisite sympathies depend. *

* See this fable farther illustrated in several parts of the author's works.

IX.

THE FABLE OF DEUCALION:

EXPLAINED OF AN USEFUL HINT IN NATURAL PHILOSOPHY.

THE poets tell us, that the inhabitants of the old world being totally destroyed by the universal deluge, excepting Deucalion and Pyrrha; these two, desiring with zealous and fervent devotion, to restore mankind, received this oracle for answer; that "they should succeed by throwing their mother's bones behind them." This at first cast them into great sorrow and despair; because, as all things were levelled by the deluge, it was in vain to seek their mother's tomb: but at length, they understood the expression of the oracle to signify the stones of the earth, which is esteemed the mother of all things.

EXPLANATION.

THIS fable seems to reveal a secret of nature, and correct an error familiar to the mind; for men's ignorance leads them to expect the renovation or restauration of things, from their corruption and remains; as the Phœnix is said to be restored out of its ashes: which is a very

improper procedure; because such kind of materials have finished their course, and are become absolutely unfit to supply the first rudiments of the same things again: whence, in cases of renovation, recourse should be had to more common principles. *

X.

THE FABLE OF SPHINX;

EXPLAINED OF THE SCIENCES.

THEY relate that Sphinx was a monster, variously formed; having the face and voice of a virgin, the wings of a bird, and the talons of a Gryphin. She resided on the top of a mountain, near the city Thebes; and also beset the highways. Her manner was to lie in ambush, and seize the travellers; and having them in her power, proposed to them certain dark and perplexed riddles, which it was thought she received from the muses: And if her wretched captives could not solve, and interpret, these riddles, she with great cruelty fell upon them, in their hesitation and confusion, and tore them to pieces.

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* See she *Sylva Sylvarum*, and the History of Life and Death.

This plague having reigned a long time, the Thebans at length offered their kingdom to the man who could interpret her riddles; there being no other way to subdue her. Oedipus, a penetrating, and prudent man, though lame in his feet, excited by so great a reward, accepted the condition; and with a good assurance of mind, chearfully presented himself before the monster, who directly asked him, "What creature that was, which being born four-footed, afterwards became two-footed, then three-footed, and lastly four-footed again?" Oedipus, with a presence of mind, replied it was man; who, upon his first birth, and infant state, crawled upon all four, in endeavouring to walk; but not long after that, went upright upon his two natural feet; again, in old age walked three-footed, with a stick; and at last growing decrepid, lay four-footed confined to his bed. And having by this exact solution obtained the victory, he slew the monster, and laying the carcass upon an ass, led her away as in triumph. And upon this he was, according to the agreement, made king of Thebes.

EXPLANATION.

THIS is an elegant, instructive fable, and seems invented to represent science, especially as joined with practice. For science may, without absurdity, be called a monster; being strangely gazed at, and admired, by the ignorant and unskilful. Her figure and form is various, by reason of the vast variety of subjects that science considers. Her voice and countenance are represented female, by reason of her gay appearance, and volubility of speech. * Wings are added, because the sciences and their inventions run, and fly about, in a moment; for knowledge, like light communicated from one torch to another, is presently catched, and copiously diffused. Sharp and hooked talons are elegantly attributed to her; because the axioms and arguments of science enter the mind, lay hold of it, fix it down, and keep it from moving or slipping away. This the sacred philosopher observed, when he said, "The words of the wise are like goads, or nails, driven far in."

* For science or philosophy has, in the general, rather been a shewy and talkative thing, than solid, serviceable, and effective.

Again, all science seems placed on high, as it were on the tops of mountains, that are hard to climb; for science is justly imagined a sublime and lofty thing, looking down upon ignorance from an eminence, and at the same time taking an extensive view on all sides, as is usual on the tops of mountains. Science is said to beset the highways; because through all the journey and peregrination of human life, there is matter and occasion offered of contemplation.

Sphinx is said to propose various difficult questions, and riddles, to men, which she received from the muses; and these questions, so long as they remain with the muses, may very well be unaccompanied with severity; for while there is no other end of contemplation and enquiry but that of knowledge alone, the understanding is not oppressed, or driven to straits and difficulties, but expatiates and ranges at large, and even receives a degree of pleasure from doubt and variety. But after the muses have given over their riddles to Sphinx, that is, to practice, which urges and impels to action, choice, and determination, then it is that they become torturing, severe, and trying: and unless solved and interpreted, strangely perplex and harass the human mind, rend it every way,

and perfectly tear it to pieces. * All the riddles of Sphinx, therefore, have two conditions annexed; viz. dilaceration to those who do not solve them; and empire to those that do. For he who understands the thing proposed, obtains his end: and every artificer rules over his work. †

Sphinx has no more than two kinds of riddles; one relating to the nature of things; the other to the nature of man: and correspondent to these, the prizes of the solution are two kinds of empire; the empire over nature, and the empire over man. For the true and ultimate end of natural philosophy, is dominion over natural things, natural bodies, remedies, machines, and

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* To gain the clearer notion of this, we need only consider the necessities and inconveniences, under which the inhabitants, even of civilized countries, frequently labour, from inundations, conflagrations, dearths, storms, lightning, wars, devastation, tyrannical governments, blind and furious zeal, superstition, want of commerce aud certain commodities; all which particulars, when they come to be practically considered, in order to their being remedied, removed or prevented, distract and perplex the mind; especially when the causes of these effects remain unknown, so as not to be governable by human means.

† This is what the author so frequently inculcates in his *Novum Organum*; viz that knowledge and power are reciprocal; so that to improve in knowledge, is to improve in

numberless other particulars: though the schools, contented with what spontaneously offers, and swollen with their own discourses, neglect, and in a manner despise, both things and works. *

But the riddle proposed to Oedipus, the solution whereof acquired him the Theban kingdom, regarded the nature of man; for he who has thoroughly looked into and examined human nature, may, in a manner, command his own fortune, and seems born to acquire dominion and rule. † Accordingly, Virgil properly makes the arts of government to be the arts of the Romans. ‡ It was, therefore, extremely apposite in Augustus Cæsar, to use the image of Sphinx in his signet, whether this happened by accident or by design, for he of all men was deeply versed in politics, and through the course of his life very happily solved abundance of new riddles, with regard to the nature of man: and unless he had done this with great dexterity and

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the power of commanding nature, by introducing new arts, and producing works and effects.

* This is largely prosecuted in the *Novum Organum*.

† See the *de Augmentis Scientiarum*, of Self-Policy, or the Doctrine of Rising in Life.

‡ "Tu regere Imperio Populos, Romane, memento:
"Hæ tibi erunt Artes."

ready address, he would frequently have been involved in imminent danger, if not destruction.

It is, with the utmost elegance, added in the fable, that when Sphinx was conquered, her carcass was laid upon an ass; for there is nothing so subtile and abstruse, but after being once made plain, intelligible and common, it may be received by the slowest capacity.

We must not omit, that Sphinx was conquered by a lame man, and impotent in his feet; for men usually make too much haste to the solution of Sphinx's riddles: whence it happens, that she prevailing, their minds are rather racked and torn by disputes, than an empire gained by works and effects. *

* See the first part of the *Novum Organum.*

XI.

THE FABLE OF PROSERPINE;

EXPLAINED OF THE SPIRIT INCLUDED IN NATURAL BODIES.

THEY tell us, Pluto having, upon that memorable division of empire among the gods, received the infernal regions for his share, despaired of winning any one of the goddesses in marriage, by an obsequious courtship, and therefore, through necessity, resolved upon a rape: And watching his opportunity, he suddenly seizes upon Proserpine, a most beautiful virgin, the daughter of Ceres, as she was gathering Narcissus flowers in the meads of Sicily; and hurrying her to his chariot, carried her with him to the subterraneal regions; where she was treated with the highest reverence, and styled the Lady of Dis. But Ceres missing her only daughter, whom she extremely loved, grew pensive and anxious, beyond measure; and taking a lighted torch in her hand, wandered the world over in quest of her daughter: but all to no purpose; 'till suspecting she might be carried to the infernal regions, she with great lamentation, and abundance of tears, importuned Jupiter to restore her; and with much ado prevailed, so far as to recover and bring her away, if she had tasted nothing there.

This proved a hard condition upon the mother; for Proserpine was found to have eaten three kernels of a pomgranate. Ceres, however, desisted not, but fell to her entreaties and lamentations afresh; insomuch that, at last, it was indulged her, that Proserpine should divide the year betwixt her husband and her mother; and live six months with the one, and as many with the other. After this, Theseus and Perithous, with uncommon audacity, attempted to force Proserpine away from Pluto's bed; but happening to grow tired in their journey, and resting themselves upon a stone, in the realms below, they could never rise from it again; but remain sitting there for ever. Proserpine, therefore, still continued Queen of the Lower Regions; in honour of whom there was also added this grand privilege, that though it had never been permitted any one to return, after having once descended thither, a particular exception was made, that he who brought a golden bough, as a present to Proserpine, might on that condition, descend and return. This was an only bough, that grew in a large dark grove, not from a tree of its own, but, like the misletoe, from another; and when plucked away, a fresh one always shot out in its stead.

EXPLANATION.

THIS fable seems to regard natural philosophy; and searches deep into that rich and fruitful virtue and supply, in subterraneous bodies, from whence all the things upon the earth's surface spring, and into which they again resolve and return. By Proserpine the ancients denoted that ætherial spirit shut up and detained within the earth, here represented by Pluto; the spirit being separated from the superior globe, according to the expression of the poet.* This spirit is conceived as ravished, or snatched up by the earth, because it can no way be detained, when it has time and opportunity to fly off, but is only wrought together, and fixed by sudden intermixture and comminution, in the same manner as if one should indeavour to mix air with water; which cannot otherwise be done, than by a quick and rapid agitation, that joins them together in froth, whilst the air is thus catched up by the water. And it is elegantly added, that Proserpine was ravished whilst she gathered Narcissus flowers; which have their name from numbedness or stupefaction; for the

* "Sive recens Tellus, seductaque nuper ab alta
"Æthere, cognati retinebat semina Cœli.

spirit we speak of, is in the fittest disposition to be catched up by terrestrial matter, when it begins to coagulate, or grow torpid, as it were.

It is an honour justly attributed to Proserpine, and not to any other wife of the gods, that of being the lady, or mistress, of her husband; because this spirit performs all the operations in the subterraneal regions, whilst Pluto, or the earth, remains stupid, or as it were ignorant of them.*

The æther, or the efficacy of the heavenly bodies, denoted by Ceres, endeavours with infinite diligence, to force out this spirit, and restore it to its pristine state. And by the torch in the hand of Ceres, or the æther, is doubtless meant the sun, which disperses light over the whole globe of the earth; and if the thing were possible, must have the greatest share in recovering Proserpine, or re-instating the subterraneal spirit. Yet Proserpine still continues and dwells below, after the manner excellently described in the condition betwixt Jupiter and Ceres. For first, it is certain that there are two ways of detaining the spirit, in solid and ter-

* See the *Sylva Sylvarum*, under the article Imagination, Nature, Spirit, and Sympathy. See also the axioms at the end of the History of Life and Death.

restrial matter; the one by condensation, or obstruction, which is more violence and imprisonment: the other, by administring a proper aliment; which is spontaneous and free. For after the included spirit begins to feed and nourish itself, it is not in a hurry to fly off, but remains, as it were, fixed in its own earth. And this is the moral of Proserpine's tasting the pomgranate: and were it not for this, she must long ago have been carried up by Ceres, who, with her torch, wandered the world over, and so the earth have been left without its spirit. For though the spirit, in metals and minerals, may perhaps be, after a particular manner, wrought in by the solidity of the mass, yet the spirit of vegetables, and animals, has open passages to escape at, unless it be willingly detained, in the way of sipping and tasting them. *

The second article of agreement, that of Proserpine's remaining six months with her mother, and six with her husband, is an elegant descrip-

* This point is largely explained in the author's History of Life and Death, but still deserves to be set in a more full and general light, by new instances and enforcements, as a particular, which, though neglected, or almost overlooked, infinitely regards the improvement of natural philosophy. See the *Sylva Sylvarum*, under the article Imagination, Nature, Spirit, Sympathy.

tion of the division of the year: for the spirit diffused through the earth, lives above ground in the vegetable world, during the summer months; but in the winter returns under ground again.

The attempt of Theseus and Perithous to bring Proserpine away, denotes that the more subtile spirits, which descend in many bodies to the earth, may frequently be unable to drink in, unite with themselves, and carry off the subterraneous spirit; but, on the contrary, be coagulated by it, and rise no more; so as to increase the inhabitants, and add to the dominion of Proserpine.*

The Alchemists will be apt to fall in with our interpretation of the golden bough, whether we will or no; because they promise golden mountains, and the restoration of natural bodies from their stone; as from the gates of Pluto: but we are well assured, that their theory has no just foundation; and suspect they have no very encouraging practical proofs of its soundness.

* Many philosophers have certain speculations to this purpose. Sir Isaac Newton, in particular, suspects that the earth receives its vivifying spirit from the comets. And the philosophical chemists and astrologers have spun the thought into many phantastical distinctions and varieties. See Newton. Princip. Lib. III. p. 473. &c. See also *Sylva Sylvarum.*

Leaving, therefore, their conceits to themselves, we shall freely declare our own sentiments upon this last part of the fable. We are certain from numerous figures and expressions of the ancients, that they judged the conservation, and in some degree, the renovation of natural bodies, to be no desperate or impossible thing; but rather abstruse, and out of the common road, than wholly impracticable. And this seems to be their opinion in the present case; as they have placed this bough among an infinite number of shrubs, in a spacious and thick wood. They supposed it of gold, because gold is the emblem of duration. They feigned it adventitious, not native, because such an effect is to be expected from art; and not from any medicine, or any simple or mere natural way of working.*

* The author's History of Life and Death is a comment upon this text.

MORAL MYTHOLOGY.

I.

THE FABLE OF MEMNON;

EXPLAINED OF THE FATAL PRECIPITANCY OF YOUTH.

THE poets made Memnon the son of Aurora; and bring him to the Trogan war in beautiful armour, and flushed with popular praise; where, thirsting after farther glory, and rashly hurrying on to the greatest enterprizes, he engages the bravest warrior of all the Greeks, Achilles; and falls by his hand, in single combat. Jupiter, in commiseration of his death, sent birds to grace his funeral, that perpetually chanted certain mournful and bewailing dirges. It is also reported, that the rays of the rising sun, striking his statue, used to give a lamenting sound.

EXPLANATION.

THIS fable regards the unfortunate end of those promising youths, who, like sons of the morning, elate with empty hopes and glittering

outsides, attempt things beyond their strength; challenge the bravest heroes; provoke them to the combat; and proving unequal, die in their high attempts.

The death of such youths seldom fails to meet with infinite pity; as no mortal calamity is more moving and afflicting, than to see the flower of virtue cropt before its time. Nay, the prime of life enjoyed to the full, or even to a degree of envy, does not assuage or moderate the grief occasioned by the untimely death of such hopeful youths: But lamentations and bewailings fly, like mournful birds, about their tombs, for a long while after: especially upon all fresh occasions, new commotions, and the beginning of great actions, the passionate desire of them is renewed, as by the sun's morning rays.

II.

THE FABLE OF TYTHONUS;

EXPLAINED OF PREDOMINANT PASSIONS.

IT is elegantly fabled by Tythonus, that being exceedingly beloved by Aurora, she petitioned Jupiter that he might prove immortal; thereby to secure herself the everlasting enjoyment of his company: but through female inadvertence she

forgot to add, that he might never grow old: so that, though he proved immortal, he became miserably worn and consumed with age, insomuch, that Jupiter, out of pity, at length transformed him to a grashopper.

EXPLANATION.

THIS fable seems to contain an ingenious description of pleasure; which at first, as it were in the morning of the day, is so welcome, that men pray to have it everlasting: but forget that satiety and weariness of it will, like old age, overtake them; though they think not of it: so that at length, when their appetite for pleasurable actions is gone, their desires and affections often continue: whence we commonly find that aged persons delight themselves with the discourse and remembrance of the things agreeable to them in their better days. This is very remarkable in men of a loose, and men of a military life: the former whereof are always talking over their amours; and the latter the exploits of their youth; like grashoppers, that show their vigour only by their chirping. *

* See the History of Life and Death.

III.

THE FABLE OF NARCISSUS;

EXPLAINED OF SELF-LOVE.

NARCISSUS is said to have been extremely beautiful and comely, but intolerably proud and disdainful; so that, pleased with himself, and scorning the world, he led a solitary life in the woods; hunting only with a few followers, who were his professed admirers: and amongst the rest, the nymph Echo was his constant attendant. In this method of life it was once his fate to approach a clear fountain; where he laid himself down to rest, in the noon-day heat; when, beholding his image in the water, he fell into such a rapture and admiration of himself, that he could by no means be got away; but remained continually fixed and gazing; till at length he was turned into a flower, of his own name, which appears early in the spring, and is consecrated to the infernal deities, Pluto, Proserpine, and the furies.

EXPLANATION.

THIS fable seems to paint the behaviour and fortune of those, who, for their beauty, or other endowments, wherewith nature, (without any

industry of their own,) has graced and adorned them, are extravagantly fond of themselves. For men of such a disposition generally affect retirement, and absence from public affairs; as a life of business must necessarily subject them to many neglects and contempts, which might disturb and ruffle their minds: whence such persons commonly lead a solitary, private, and shadowy life; see little company, and those only such as highly admire and reverence them; or, like an echo, assent to all they say.

And they who are depraved, and rendered still fonder of themselves by this custom, grow strangely indolent, unactive, and perfectly stupid. The Narcissus, a spring-flower, is an elegant emblem of this temper, which at first flourishes, and is talked of, but when ripe, frustrates the expectation conceived of it.

And that this flower should be sacred to the infernal powers, carries on the allusion still farther; because men of this humour are perfectly useless in all respects: for whatever yields no fruit, but passes, and is no more, like the way of a ship in the sea, was by the ancients consecrated to the infernal shades and powers.

IV.

THE FABLE OF JUNO'S COURTSHIP;

EXPLAINED OF SUBMISSION, AND ABJECTION.

THE poets tell us, that Jupiter, to carry on his love-intrigues, assumed many different shapes; as of a bull, an eagle, a swan, a golden shower, &c. but when he attempted Juno, he turned himself into the most ignoble and ridiculous creature; even that of a wretched, wet, weather-beaten, affrighted, trembling, and half-starved cuckow.

EXPLANATION.

THIS is a wise fable, and drawn from the very entrails of morality. The moral is, that men should not be conceited of themselves, and imagine that a discovery of their excellencies will always render them acceptable; for this can only succeed according to the nature and manners of the person they court, or solicit; who, if he be a man not of the same gifts and endowments, but altogether of a haughty and contemptuous behaviour, here represented by the person of Juno, they must entirely drop the character that carries the least show of worth, or grace-

fulness; if they proceed upon any other footing it is downright folly: nor is it sufficient to act the deformity of obsequiousness, unless they really change themselves, and become abject and contemptible in their persons.

V.

THE FABLE OF CASSANDRA;

EXPLAINED OF TOO FREE AND UNSEASONABLE ADVICE.

THE Poets relate, that Apollo falling in love with Cassandra, was still deluded and put off by her, yet fed with hopes, till she had got from him the gift of prophecy; and having now obtained her end, she flatly rejected his suit. Apollo, unable to recal his rash gift, yet enraged to be out-witted by a girl, annexed this penalty to it, that though she should always prophesy true, she should never be believed; whence her divinations were always slighted, even when she again and again predicted the ruin of her country.

EXPLANATION.

THIS fable seems invented to express the insignificance of unseasonable advice. For they who are conceited, stubborn, or intractible, and listen not to the instructions of Apollo, the god

of harmony, so as to learn and observe the modulations and measures of affairs, the sharps and flats of discourse, the difference between judicious and vulgar ears, and the proper times of speech and silence, let them be ever so intelligent, and ever so frank of their advice, or their counsels ever so good and just, yet all their endeavours, either of persuasion or force, are of little significance, and rather hasten the ruin of those they advise. But at last, when the calamitous event has made the sufferers feel the effect of their neglect, they too late reverence their advisers, as deep, foreseeing, and faithful prophets.

Of this we have a remarkable instance in Cato of Utica, who discovered afar off, and long foretold, the approaching ruin of his country, both in the first conspiracy, and as it was prosecuted in the civil war between Cæsar and Pompey, yet did no good the while, but rather hurt the commonwealth, and hurried on its destruction, which Cicero wisely observed in these words: "Cato, indeed, judges excellently but prejudices the state; for he speaks as in the commonwealth of Plato, and not as in the dregs of Romulus."*

* The fable of Dionysius or Bacchus, explained of the human passions, should have come next after this, so as

VI.

THE FABLE OF THE SIRENS;

EXPLAINED OF MEN'S PASSION FOR PLEASURES.

INTRODUCTION.

THE fable of the Sirens is, in a vulgar sense, justly enough explained of the pernicious incentives to pleasure: but the antient mythology seems to us like a vintage ill pressed and trod; for though something has been drawn from it, yet all the more excellent parts remain behind, in the grapes that are untouched.

FABLE.

THE Sirens are said to be the daughters of Achelous, and Terpsichore one of the muses. In their early days, they had wings, but lost them upon being conquered by the muses, with whom they rashly contended: and with the feathers of these wings the muses made themselves crowns, so that from this time the muses wore wings on their heads, excepting only the mother to the Sirens.

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immediately to precede the fable of the Sirens, had it not been already made use of, by way of example, in the *de Augmentis Scientiarum*.

These Sirens resided in certain pleasant islands, and when from their watch-tower they saw any ship approaching, they first detained the sailors by their music, then inticing them to shore, destroyed them.

Their singing was not of one and the same kind, but they adapted their tunes exactly to the nature of each person, in order to captivate and secure him. And so destructive had they been, that these islands of the Sirens appeared, to a very great distance, white with the bones of their unburied captives.

Two different remedies were invented to protect persons against them, the one by Ulysses, the other by Orpheus. Ulysses commanded his associates to stop their ears close with wax; and he determining to make the trial, and yet avoid the danger, ordered himself to be tied fast to a mast of the ship, giving strict charge not to be unbound, even though himself should entreat it; but Orpheus, without any binding at all, escaped the danger, by loudly chanting to his harp the praises of the gods, whereby he drowned the voices of the Sirens.

EXPLANATION.

This fable is of the moral kind, and appears no less elegant than easy to interpret. For plea-

sures proceed from plenty and affluence, attended with activity or exultation of the mind.* Antiently their first incentives were quick, and seized upon men as if they had been winged; but learning and philosophy afterwards prevailing, had, at least, the power to lay the mind under some restraint, and make it consider the issue of things, and thus deprived pleasures of their wings.

This conquest redounded greatly to the honor and ornament of the muses, for after it appeared, by the example of a few, that philosophy could introduce a contempt of pleasures, it immediately seemed to be a sublime thing that could raise and elevate the soul, fixed in a manner down to earth, and thus render men's thoughts, which reside in the head, winged as it were, or sublime.

Only the mother of the Sirens was not thus plumed on the head, which doubtless denotes superficial learning, invented and used for delight and levity; an eminent example whereof we have in Petronius, who, after receiving sentence of death, still continued his gay frothy humour, and, as Tacitus observes, used his learning

* The one denoted by the river Achelous, and the other by Terpsichore, the muse that invented the Cithara, and delighted in dancing.

to solace or divert himself; and instead of such discourses as give a firmness and constancy of mind, read nothing but loose poems and verses.* Such learning as this seems to pluck the crowns again from the muses heads, and restore them to the Sirens.

The Sirens are said to inhabit certain islands, because pleasures generally seek retirement, and often shun society. And for their songs, with the manifold artifice and destructiveness thereof, this is too obvious and common to need explation. But that particular, of the bones stretching like white clifts along the shores, and appearing afar off, contains a more subtile allegory, and denotes that the examples of others calamity and misfortunes, though ever so manifest and apparent, have yet but little force to deter the corrupt nature of man from pleasures.

The allegory of the remedies against the Sirens is not difficult, but very wise and noble: it proposes, in effect, three remedies, as well against subtile as violent mischiefs, two drawn from philosophy and one from religion.

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* "Vivamus, mea Lesbia, atque amemus;
"Rumoresque Senum severiorum
"Omnes unius estimemus Assis.

And again—

"Jura Senes norint, & quod sit Fasque Nefasque
"Inquirant tristes; Legumque examina servent."

The first means of escaping is to resist the earliest temptation in the beginning, and diligently avoid and cut off all occasions that may solicit or sway the mind; and this is well represented by stopping of the ears; a kind of remedy to be necessarily used with mean and vulgar minds, such as the retinue of Ulysses.

But nobler spirits may converse, even in the midst of pleasures, if the mind be well guarded with constancy and resolution. And thus some delight to make a severe trial of their own virtue, and thoroughly acquaint themselves with the folly and madness of pleasures, without complying or being wholly given up to them; which is what Solomon professes of himself, when he closes the account of all the numerous pleasures he gave a loose to, with this expression, "But wisdom still continued with me." Such heroes in virtue may, therefore, remain unmoved by the greatest incentives to pleasure, and stop themselves on the very precipice of danger; if, according to the example of Ulysses, they interdict themselves all pernicious counsel, and obsequiousness of their friends and companions, which have the greatest power to shake and unsettle the mind.

But the most excellent remedy, in every temptation, is that of Orpheus, who, by loudly chant-

ing and resounding the praises of the gods, confounded the voices, and kept himself from hearing the music of the Sirens; for divine contemplations exceed the pleasures of sense, not only in power but also in sweetness.

VII.

THE FABLE OF DIOMED;

EXPLAINED OF PERSECUTION, OR ZEAL FOR RELIGION.

DIOMED acquired great glory and honour at the Trojan war, and was highly favoured by Pallas, who encouraged and excited him by no means to spare Venus, if he should casually meet her in fight. He followed the advice with too much eagerness and intrepidity, and accordingly wounded that goddess in her hand. This presumptuous action remained unpunished for a time; and when the war was ended, he returned with great glory and renown to his own country, where, finding himself embroiled with domestic affairs, he retired into Italy. Here also, at first he was well received, and nobly entertained by King Daunus, who, besides other gifts and honours, erected statues for him over all his dominions. But upon the first calamity that afflicted the people after the stranger's arrival, Daunus

immediately reflected that he entertained a devoted person in his palace, an enemy to the gods, and one who had sacrilegiously wounded a goddess with his sword, whom it was impious but to touch. To expiate, therefore, his country's guilt, he without regard to the laws of hospitality, which were less regarded by him than the laws of religion, directly slew his guest, and commanded his statues and all his honours to be razed and abolished. Nor was it safe for others to commiserate or bewail so cruel a destiny; but even his companions in arms, whilst they lamented the death of their leader, and filled all places with their complaints, were turned into a kind of swans, which are said, at the approach of their own death, to chaunt sweet melancholy dirges.

EXPLANATION.

THIS fable intimates an extraordinary and almost singular thing, for no hero besides Diomed is recorded to have wounded any of the gods. Doubtless, we have here described the nature and fate of a man, who professedly makes any divine worship or sect of religion, though in itself vain and light, the only scope of his actions, and resolves to propagate it by fire and sword. For although the bloody dissentions and differences about religion were unknown to the an-

tients, yet so copious and diffusive was their knowledge, that what they knew not by experience, they comprehended in thought and representation: those, therefore, who endeavour to reform or establish any sect of religion, though vain, corrupt, and infamous (which is here denoted under the person of Venus), not by the force of reason, learning, sanctity of manners, the weight of arguments, and examples; but would spread or extirpate it by persecution, pains, penalties, tortures, fire and sword; may, perhaps, be instigated hereto by Pallas, that is, by a certain rigid, prudential consideration, and a severity of judgment, by the vigour and efficacy whereof, they see thoroughly into the fallacies and fictions of the delusions of this kind; and through aversion to depravity and a well-meant zeal, these men usually for a time, acquire great fame and glory, and are by the vulgar, to whom no moderate measures can be acceptable, extolled, and almost adored, as the only patrons and protectors of truth and religion; men of any other disposition seeming, in comparison with these, to be luke-warm, mean-spirited, and cowardly. This fame and felicity, however, seldom endures to the end; but all violence, unless it escapes the reverses and changes of things by untimely death, is commonly unpros-

perous in the issue: and if a change of affairs happens, and that sect of religion, which was persecuted and oppressed, gains strength and rises again; then the zeal and warm endeavours of this sort of men are condemned, their very name becomes odious, and all their honours terminate in disgrace.

As to the point that Diomed should be slain by his hospitable entertainer, this denotes that religious dissentions may cause treachery, bloody animosities and deceit, even between the nearest friends.

That complaining or bewailing should not, in so enormous a case, be permitted to friends affected by the catastrophe, without punishment, includes this prudent admonition; that almost in all kinds of wickedness and depravity, men have still room left for commiseration, so that they who hate the crime, may yet pity the person, and bewail his calamity, from a principle of humanity and good-nature; and to forbid the overflowings and intercourses of pity upon such occasions, were the extremest of evils; yet in the cause of religion and impiety, the very commiserations of men are noted and suspected. On the other hand, the lamentations and complainings of the followers and attendants of Diomed, that is, of men of the same sect or

persuasion, are usually very sweet, agreeable, and moving, like the dying notes of swans, or the birds of Diomed. This also is a noble and remarkable part of the allegory, denoting, that the last words of those who suffer for the sake of religion, strongly affect and sway mens' minds, and leave a lasting impression upon the sense and memory.*

* See the *de Augment. Scientiar.*

POLITICAL MYTHOLOGY.

I.

THE FABLE OF ACTEON AND PENTHEUS;

EXPLAINED OF CURIOSITY, OR PRYING INTO THE SECRETS OF PRINCES, AND DIVINE MYSTERIES.

THE ancients afford us two examples, for suppressing the impertinent curiosity of mankind, in diving into secrets, and imprudently longing and endeavouring to discover them. The one of these, is in the person of Acteon; and the other, in that of Pentheus. Acteon undesignedly chancing to see Diana naked, was turned into a stag, and torn to pieces by his own hounds. And Pentheus desiring to pry into the hidden mysteries of Bacchus's sacrifice, and climbing a tree for that purpose, was struck with a phrenzy. This phrenzy of Pentheus caused him to see things double, particularly the sun, and his own city Thebes, so that running homewards, and immediately espying another Thebes, he runs towards that; and thus continues incessantly tending first to the one,

and then to the other, without coming at either.

EXPLANATION.

THE first of these fables may relate to the secrets of princes; and the second to divine mysteries. For they who are not intimate with a prince, yet against his will have a knowledge of his secrets, inevitably incur his displeasure: and therefore, being aware that they are singled out, and all opportunities watched against them, they lead the life of a stag, full of fears and suspicions. It likewise frequently happens, that their servants and domestics accuse them, and plot their overthrow, in order to procure favour with the prince: for whenever the king manifests his displeasure, the person it falls upon must expect his servants to betray him, and worry him down, as Acteon was worried by his own dogs.

The punishment of Pentheus is of another kind: for they who, unmindful of their mortal state, rashly aspire to divine mysteries, by climbing the heights of nature and philosophy, here represented by climbing a tree; their fate is perpetual inconstancy, perplexity, and instability of judgment. For as there is one light of nature, and another light that is divine, they

see, as it were, two suns. And as the actions of life, and the determinations of the will, depend upon the understanding, they are distracted as much in opinion, as in will: and therefore judge very inconsistently, or contradictorily; and see as it were Thebes double: for Thebes being the refuge and habitation of Pentheus, here denotes the ends of actions: whence they know not what course to take, but remaining undetermined and unresolved in their views and designs, they are merely driven about by every sudden gust, and impulse of the mind. *

II.

THE FABLE OF THE GODS SWEARING BY THE RIVER STYX;

EXPLAINED OF NECESSITY, IN THE OATHS OR SOLEMN LEAGUES OF PRINCES.

THE only solemn oath, by which the gods irrevocably obliged themselves, is a well known thing, and makes a part of many ancient fables. To this oath they did not invoke any celestial divinity, or divine attribute, but only called to witness the river Styx; which, with many Meanders, surrounds the infernal court of Dis.

* See *de Augmentis Scientiarum.*

For this form alone, and none but this, was held inviolable and obligatory: and the punishment of falsifying it was, that dreaded one of being excluded, for a certain number of years, the table of the gods.

EXPLANATION.

THIS fable seems invented to shew the nature of the compacts and confederacies of princes; which, though ever so solemnly and religiously sworn to, prove but little the more binding for it: so that oaths in this case seem used, rather for decorum, reputation, and ceremony, than for fidelity, security, and effectuating. And though these oaths were strengthened with the bonds of affinity, which are the links and ties of nature, and again, by mutual services and good offices, yet we see all this will generally give way to ambition, convenience, and the thirst of power: the rather, because it is easy for princes, under various, specious pretences to defend, disguise, and conceal their ambitious desires, and insincerity; having no judge to call them to account. There is, however, one true and proper confirmation of their faith, though no celestial divinity; but, that great divinity of princes, Necessity; or, the danger of the state; and the securing of advantage.

This necessity is elegantly represented by Styx, the fatal river, that can never be crossed back. And this deity it was, which Iphicrates, the Athenian, invoked in making a league: and because he roundly and openly avows what most others studiously conceal, it may be proper to give his own words. Observing, that the Lacedemonians were inventing and proposing a variety of securities, sanctions, and bonds of alliance, he interrupted them thus: "There may indeed, my friends, be one bond and means of security between us; and that is, for you to demonstrate you have delivered into our hands, such things as that if you had the greatest desire to hurt us, you could not be able." Therefore, if the power of offending be taken away, or if by a breach of compact there be danger of destruction or diminution to the state, or tribute, then it is that covenants will be ratified, and confirmed, as it were by the Stygian oath, whilst there remains an impending danger of being prohibited and excluded the banquet of the gods: by which expression the ancients denoted the rights and prerogatives, the affluence and the felicities of empire and dominion. *

* See *de Augmentis Scientiarum.*

III.

THE FABLE OF JUPITER AND METIS;

EXPLAINED OF PRINCES AND THEIR COUNCIL.

THE ancient poets relate that Jupiter took Metis to wife, whose name plainly denotes counsel; and that she being pregnant by him, and he perceiving it, would by no means wait the time of her delivery; but directly devoured her: whence himself also became pregnant, and was delivered in a wonderful manner; for he, from his head or brain, brought forth Pallas armed.

EXPLANATION.

THIS fable, which in its literal sense appears monstrously absurd, seems to contain a state secret; and shews with what art kings usually carry themselves towards their counsil, in order to preserve their own authority and majesty, not only inviolate, but so as to have it magnified and heightened among the people. For kings commonly link themselves, as it were in a nuptial bond, to their council, and deliberate and communicate with them after a prudent and laudable custom, upon matters of the greatest importance; at the same time, justly conceiving

this no diminution of their majesty: but when the matter once ripens to a decree, or order, which is a kind of birth, the king then suffers the council to go on no further, lest the act should seem to depend upon their pleasure. Now therefore, the king usually assumes to himself whatever was wrought, elaborated, or formed, as it were, in the womb of the council, (unless it be a matter of an invidious nature, which he is sure to put from him) so that the decree and the execution shall seem to flow from himself. And as this decree, or execution, proceeds with prudence, and power, so as to imply necessity, it is elegantly wrapt up under the figure of Pallas armed.

Nor are kings content to have this seem the effect of their own authority, free-will, and uncontrolable choice, unless they also take the whole honour to themselves, and make the people imagine that all good and wholesome decrees proceed entirely from their own head; that is, their own sole prudence and judgment.

IV.

THE FABLE OF ENDYMION;

EXPLAINED OF COURT-FAVOURITES.

THE goddess Luna, is said to have fallen in love with the shepherd Endymion, and to have carried on her amours with him, in a new and singular manner: it being her custom, whilst he lay reposing in a native cave, under Mount Latmus, to descend frequently from her sphere, enjoy his company whilst he slept, and then go up to heaven again. And all this while, Endymion's fortune was no way prejudiced by his unactive and sleepy life; the goddess causing his flocks to thrive, and grow so exceeding numerous, that none of the other shepherds could compare with him.

EXPLANATION.

THIS fable seems to describe the tempers and dispositions of princes, who being thoughtful and suspicious, do not easily admit to their privacies such men as are prying, curious, and vigilant, or as it were sleepless; but rather such as are of an easy, obliging nature, and indulge them in their pleasures, without seeking any thing farther: but seeming ignorant, insensible, or as it were

lulled asleep before them. Princes usually treat such persons familiarly; and quitting their throne like Luna, think they may with safety unbosom to them. This temper was very remarkable in Tiberius, a prince exceeding difficult to please; and who had no favourites but those that perfectly understood his way, and at the same time, obstinately dissembled their knowledge, almost to a degree of stupidity.

The cave is not improperly mentioned in the fable; it being a common thing for the favourites of a prince to have their pleasant retreats, whither to invite him, by way of relaxation, though without prejudice to their own fortunes: these favourites usually making a good provision for themselves.

For though their prince should not, perhaps, promote them to dignities, yet, out of real affection, and not only for convenience, they generally feel the enriching influence of his bounty.

V.

THE FABLE OF NEMESIS;

EXPLAINED OF THE REVERSES OF FORTUNE.

NEMESIS is represented as a goddess venerated by all; but feared by the powerful and the fortunate. She is said to be the daughter of Nox and Oceanus. She is drawn with wings, and a crown; a javelin of ash in her right hand; a glass containing Ethiopians in her left; and riding upon a stag.

EXPLANATION.

THE fable receives this explanation. The word Nemesis manifestly signifies revenge, or retribution: for the office of this goddess consisted in interposing, like the Roman tribunes, with an 'I forbid it' in all courses of constant and perpetual felicity: so as not only to chastise haughtiness, but also to repay, even innocent and moderate happiness with adversity: as if it were decreed, that none of human race should be admitted to the banquet of the gods, but for sport. And, indeed, to read over that chapter of Pliny, wherein he has collected the miseries and misfortunes of Augustus Cæsar, whom of all mankind one would judge most fortunate; as

he had a certain art of using and enjoying prosperity, with a mind no way tumid, light, effeminate, confused, or melancholic; one cannot but think this a very great and powerful goddess, who could bring such a victim to her altar.*

The parents of this goddess were Oceanus and Nox; that is, the fluctuating change of things, and the obscure and secret divine decrees. The changes of things are aptly represented by the ocean, on account of its perpetual ebbing and flowing; and secret providence is justly expressed by night. Even the heathens have observed this secret Nemesis of the night; or the difference betwixt divine and human judgment.†

Wings are given to Nemesis, because of the sudden and unforeseen changes of things; for, from the earliest account of time, it has been common for great and prudent men to fall by the dangers they most despised. Thus Cicero, when admonished by Brutus of the infidelity and rancour of Octavius, coolly wrote back, "I cannot, however, but be obliged to you, Brutus, as I ought, for informing me, though of such a trifle."

Nemesis also has her crown, by reason of the

* As she also brought the author himself.

† " ---------- Cadit Ripheus, justissimus unus,
" Qui fuit ex Teucris, & servantissimus æqui:
" Diis aliter visum.

invidious and malignant nature of the vulgar, who generally rejoice, triumph, and crown her, at the fall of the fortunate, and the powerful. And for the javelin in her right hand, it has regard to those whom she has actually struck and transfixed. But whoever escapes her stroke, or feels not actual calamity or misfortune, she affrights with a black and dismal sight in her left hand: for doubtless, mortals on the highest pinnacle of felicity, have a prospect of death, diseases, calamities, perfidious friends, undermining enemies, reverses of fortune, &c. represented by the Ethiopians in her glass. Thus Virgil, with great elegance, describing the battle of Actium, says of Cleopatra, that, "She did not yet perceive the two asps behind her;"* but soon after, which way soever she turned, she saw whole troops of Ethiopians still before her.

Lastly, it is significantly added, that Nemesis rides upon a stag, which is a very long-lived creature; for though, perhaps, some by an untimely death in youth, may prevent or escape this goddess, yet they who enjoy a long flow of happiness and power, doubtless, become subject to her at length, and are brought to yield.

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* "Regina in mediis patrio vocat Agmina sistro;
"Necdum etiam geminos a tergo respicit angues.

VI.

THE FABLE OF CYCLOPS' DEATH;

EXPLAINED OF BASE COURT-OFFICERS.

IT is related that the Cyclops, for their savageness and cruelty, were by Jupiter first thrown into Tartarus, and there condemned to perpetual imprisonment: but that afterwards Tellus persuaded Jupiter it would be for his service to release them, and employ them in forging thunder-bolts. This he accordingly did; and they, with unwearied pains and diligence, hammered out his bolts, and other instruments of terror, with a frightful and continual din of the anvil.

It happened long after, that Jupiter was displeased with Æsculapius, the son of Apollo, for having, by the art of medicine, restored a dead man to life: but concealing his indignation, because the action in itself was pious and illustrious, he secretly incensed the Cyclops against him, who, without remorse, presently slew him with their thunder-bolts: in revenge whereof, Apollo, with Jupiter's connivance, shot them all dead with his arrows.

EXPLANATION.

THIS fable seems to point at the behaviour of princes, who having cruel, bloody, and oppres-

sive ministers, first punish and displace them; but afterwards, by the advice of Tellus, that is, some earthly-minded and ignoble person, employ them again, to serve a turn, when there is occasion for cruelty in execution, or severity in exaction: but these ministers being base in their nature, whet by their former disgrace, and well aware of what is expected from them, use double diligence in their office; till proceeding unwarily, and over-eager to gain favour, they sometimes from the private nods, and ambiguous orders of their prince, perform some odious or execrable action: When princes, to decline the envy themselves, and knowing they shall never want such tools at their beck, drop them, and give them up to the friends and followers of the injured person; thus exposing them, as sacrifices to revenge and popular odium: whence with great applause, acclamations, and good wishes to the prince, these miscreants at last meet with their desert.

VII.

THE FABLE OF THE GIANTS' SISTER;

EXPLAINED OF PUBLIC DETRACTION.

THE poets relate, that the giants, produced from the earth, made war upon Jupiter, and the other gods; but were repulsed and conquered by thunder: whereat the earth, provoked, brought forth Fame, the youngest sister of the giants, in revenge for the death of her sons.

EXPLANATION.

The meaning of the fable seems to be this; The earth denotes the nature of the vulgar, who are always swelling, and rising against their rulers, and endeavouring at changes. This disposition getting a fit opportunity, breeds rebels and traitors; who, with impetuous rage, threaten and contrive the overthrow and destruction of princes.

And when brought under and subdued, the same vile and restless nature of the people, impatient of peace, produces rumours, detractions, slanders, libels, &c. to blacken those in authority: so that rebellious actions, and seditious rumours differ not in origin and stock, but only as it were in sex; treasons, and rebellions, being the brothers; and scandal, or detraction, the sister.

VIII.

THE FABLE OF TYPHON;

EXPLAINED OF REBELLION.

THE fable runs, that Juno, enraged at Jupiter's bringing forth Pallas without her assistance, incessantly solicited all the gods and goddesses, that she might produce without Jupiter: and having by violence and importunity obtained the grant, she struck the earth, and thence immediately sprung up Typhon, a huge and dreadful monster, whom she committed to the nursing of a serpent. As soon as he was grown up, this monster waged war on Jupiter, and taking him prisoner in the battle, carried him away on his shoulders, into a remote and obscure quarter: and there cutting out the sinews of his hands and feet, he bore them off, leaving Jupiter behind miserably maimed and mangled.

But Mercury afterwards stole these sinews from Typhon, and restored them to Jupiter. Hence, recovering his strength, Jupiter again pursues the monster; first wounds him with a stroke of his thunder, when serpents arose from the blood of the wound: and now the monster being dismayed, and taking to flight, Jupiter next darted Mount Ætna upon him, and crush-
im with the weight.

EXPLANATION.

THIS fable seems designed to express the various fates of kings, and the turns that rebellions sometimes take, in kingdoms. For princes may be justly esteemed married to their states, as Jupiter to Juno: but it sometimes happens, that being depraved by long wielding of the scepter, and growing tyrannical, they would engross all to themselves; and slighting the counsel of their senators and nobles, conceive by themselves; that is, govern according to their own arbitrary will and pleasure. This inflames the people, and makes them endeavour to create and set up some head of their own. Such designs are generally set on foot by the secret motion and instigation of the peers and nobles; under whose connivance the common sort are prepared for rising: whence proceeds a swell in the state, which is appositely denoted by the nursing of Typhon. This growing posture of affairs is fed by the natural depravity, and malignant disposition of the vulgar, which to kings is an envenomed serpent. And now the disaffected uniting their force, at length break out into open rebellion, which, producing infinite mischiefs, both to prince and people, is represented by the horrid and multiplied deformity of Typhon, with

his hundred heads, denoting the divided powers; his flaming mouths, denoting fire and devastation; his girdles of snakes denoting sieges and destruction; his iron hands, slaughter and cruelty; his eagle's talons, rapine and plunder; his plumed body, perpetual rumours, contradictory accounts, &c. And sometimes these rebellions grow so high, that kings are obliged, as if carried on the backs of the rebels, to quit the throne, and retire to some remote and obscure part of their dominions, with the loss of their sinews, both of money and majesty.

But if now they prudently bear this reverse of fortune, they may, in a short time, by the assistance of Mercury, recover their sinews again; that is, by becoming moderate and affable; reconciling the minds and affections of the people to them, by gracious speeches, and prudent proclamations, which will win over the subject chearfully to afford new aids and supplies, and add fresh vigour to authority. But prudent and wary princes here seldom incline to try their fortune by a war, yet do their utmost, by some grand exploit, to crush the reputation of the rebels: and if the attempt succeeds, the rebels, conscious of the wound received, and distrustful of their cause, first betake themselves to brokén and empty threats, like the his-

sings of serpents; and next, when matters are grown desperate, to flight. And now, when they thus begin to shrink, it is safe and seasonable for kings to pursue them with their forces, and the whole strength of the kingdom; thus effectually quashing and suppressing them, as it were by the weight of a mountain.

IX.

THE FABLE OF ACHELOUS;

EXPLAINED OF WAR, BY INVASION.

THE ancients relate, that Hercules and Achelous being rivals in the courtship of Deianira, the matter was contested by single combat: when Achelous having transformed himself, as he had power to do, into various shapes, by way of trial; at length, in the form of a fierce wild bull, prepares himself for the fight: But Hercules still retains his human shape, engages sharply with him, and in the issue broke off one of the bull's horns; and now Achelous in great pain and fright, to redeem his horn, presents Hercules with the cornu-copia.

EXPLANATION.

THIS fable relates to military expeditions and preparations: for the preparation of war on the

defensive side, here denoted by Achelous, appears in various shapes, whilst the invading side has but one simple form; consisting either in an army, or perhaps a fleet. But the country that expects the invasion, is employed infinite ways; in fortifying towns, blockading passes, rivers, and ports; raising soldiers; disposing garrisons; building and breaking down bridges; procuring aids; securing provisions, arms, ammunition, &c. So that there appears a new face of things every day; and at length when the country is sufficiently fortified and prepared, it represents to the life, the form, and threats of a fierce, fighting bull.

On the other side, the invader presses on to the fight, fearing to be distressed in an enemy's country. And if after the battle he remains master of the field, and has now broke, as it were, the horn of his enemy, the besieged, of course, retire inglorious, affrighted, and dismayed, to their strong-hold; there endeavouring to secure themselves, and repair their strength; leaving, at the same time, their country a prey to the conqueror: which is well expressed by the Amalthean horn, or cornu-copia.

X.

THE FABLE OF DÆDALUS;

EXPLAINED OF ARTS AND ARTISTS IN KINGDOMS AND STATES.

THE ancients have left us a description of mechanical skill, industry, and curious arts converted to ill uses, in the person of Dædalus; a most ingenious but execrable artist. This Dædalus was banished for the murder of his brother artist, and rival; yet found a kind reception in his banishment, from the kings and states where he came. He raised many incomparable edifices to the honour of the gods, and invented many new contrivances for the beautifying and ennobling of cities and public places; but still he was most famous for wicked inventions. Among the rest he contrived the engine for satisfying the monstrous lust of Pasiphae with a bull; wherein, by his abominable industry and destructive genius, he assisted to the fatal and infamous production of the monster Minotaur; that devourer of promising youths. And then, to cover one mischief with another, and provide for the security of this monster, he invented and built a labyrinth; a work infamous for its end and design, but admirable and prodigious for art and

workmanship. After this, that he might not only be celebrated for wicked inventions, but be sought after, as well for prevention, as for instruments of mischief, he formed that ingenious device of his clue, which led directly through all the windings of the labyrinth. This Dædalus was persecuted by Minos, with the utmost severity, diligence, and enquiry; but he always found refuge and means of escaping. Lastly, endeavouring to teach his son, Icarus, the art of flying, the novice trusting too much to his wings, fell from his towering flight and was drowned in the sea.

EXPLANATION.

The sense of the fable runs thus. It first denotes envy; which is continually upon the watch, and strangely prevails among excellent artificers; for no kind of people are observed to be more implacably and destructively envious to one another than these.

In the next place, it observes an impolitic and improvident kind of punishment inflicted upon Dædalus, that of banishment; for good workmen are gladly received every where: so that banishment to an excellent artificer, is scarce any punishment at all; whereas other conditions

of life cannot easily flourish from home. For the admiration of artists is propagated and increased among foreigners and strangers; it being a principle in the minds of men, to slight and despise the mechanical operators of their own nation.

The succeeding part of the fable is plain, concerning the use of mechanic arts, whereto human life stands greatly indebted; as receiving from this treasury numerous particulars for the service of religion, the ornament of civil society, and the whole provision and apparatus of life; but then the same magazine supplies instruments of lust, cruelty, and death. For, not to mention the arts of luxury and debauchery, we plainly see how far the business of exquisite poisons, guns, engines of war, and such kind of destructive inventions, exceeds the cruelty and barbarity of the minotaur himself.

The addition of the labyrinth contains a beautiful allegory, representing the nature of mechanic arts in general: for all ingenious and accurate mechanical inventions may be conceived as a labyrinth, which, by reason of their subtilty, intricacy, crossing, and interfering with one another, and the apparent resemblances they have among themselves, scarce any power of the judgment can unravel and distinguish; so that

they are only to be understood and traced by the clue of experience.*

It is no less prudently added, that he who invented the windings of the labyrinth, should also shew the use and management of the clue: for mechanical arts have an ambiguous or double use; and serve as well to produce as to prevent mischief and destruction; so that their virtue almost destroys or unwinds itself.

Unlawful arts, and indeed frequently arts themselves, are persecuted by Minos, that is, by laws, which prohibit and forbid their use among the people: but notwithstanding this, they are hid, concealed, retained, and every where find reception and sculking-places; a thing well observed by Tacitus of the astrologers and fortune-tellers of his time. "These," says he, "are a kind of men that will always be prohibited, and yet will always be retained in our city.

But lastly, all unlawful and vain arts, of what kind soever, lose their reputation in tract of time; grow contemptible and perish, through their over-confidence, like Icarus, being commonly unable to perform what they boasted.

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* In this light we are to consider all the furniture and apparatus of Shops, Warehouses, and Magazines.

And to say the truth, such arts are better suppressed by their own vain pretensions, than checked or restrained by the bridle of laws. *

* The author's Essays are writings nearly of the same kind with the present, though more reserved, and guarded. Indeed, he scarce seems any where to speak his sentiments with so great freedom and perspicuity, as under the pretext, or intention, of explaining these ancient fables: For which reason, this piece may deserve to be the more read, by such as desire to understand the rest of his works.

BIOGRAPHY:

Consisting of the

CIVIL CHARACTERS

OF

JULIUS CÆSAR, AUGUSTUS CÆSAR, HENRY VII.

AND

QUEEN ELIZABETH.

INTRODUCTION.

THE four following pieces, are all that Lord Bacon appears to have written, in the way of character or biography. The advantages of this kind of writing are shewn, and the practice of it recommended, in the de Augmentis Scientiarum. *It is a practice that now seems to obtain pretty generally in Europe; and affords us the lives of many eminent persons, both public and private. Whether the author had any particular view in drawing the civil characters of Julius and Augustus Cæsar, or whether he intended to have gone through with the twelve Cæsars in the same manner, does not appear.*

The character of King Henry the Seventh is taken from the recapitulation of the English history of that prince; collated with the author's Latin version: and the rest are new translations from the Latin originals.

JULIUS CÆSAR.

JULIUS CÆSAR, at the first encountered a rugged fortune, which turned to his advantage: for this curbed his pride, and spurred his industry. He was a man of unruly passions, and desires; but extremely clear and settled in his judgment and understanding: as appears by his ready address, to extricate himself both in action and discourse; for no man ever resolved quicker, or spoke clearer. But his will and appetite were restless, and ever launched out beyond his acquisitions; yet the transitions of his actions were not rash, but well concerted: for he always brought his undertakings to complete and perfect periods. Thus, after having obtained numerous victories, and procured a great degree of security in Spain, he did not slight the remains of the civil war in that country; but having, in person, seen all things fully composed and settled there, he immediately went upon his expedition against the Parthians.

He was, without dispute, a man of a great and noble soul; though rather bent upon procuring his own private advantage, than good to the public: for he referred all things to himself, and was the truest centre of his own actions. Whence flowed his great and almost perpetual felicity and success: for neither his country, nor religion, neither good offices, relations, nor friends, could check or moderate his designs. Again, he was not greatly bent upon preserving his memory; for he neither established a state of things, built lasting monuments, nor enacted laws of perpetuity, but worked entirely for his own present and private ends; thus confining his thoughts within the limits of his own times. It is true, he endeavoured after fame and reputation, as he judged they might be of service to his designs; but certainly, in his heart, he rather aimed at power, than dignity; and courted reputation and honours only as they were instruments of power and grandeur. So that he was led, not by any laudable course of discipline, but by a kind of natural impulse, to the sovereignty; which he rather affected to seize, than appear to deserve.

This procedure ingratiated him with the people, who had no dignity to lose; but, among the nobility and gentry, who desired to retain their

honours, it gained him the character of a bold, aspiring man. And certainly they judged right; for he was naturally very audacious, and never put on the appearance of modesty, but to serve a turn. Yet this daring spirit of his was so tempered, that it neither subjected him to the censure of rashness, or intolerable haughtiness; nor rendered his nature suspected: but was taken to proceed from a certain simplicity, and freedom of behaviour, joined with the nobility of his birth. And in all other respects he had the reputation, not of a cunning and designing, but of an open and sincere man. And though he was a perfect master of dissimulation, and wholly made up of art, without leaving any thing to nature but what art had approved, yet nothing of design or affectation appeared in his carriage: so that he was thought to follow his own natural disposition. He did not, however, stoop to any mean artifices, which men unpractised in the world, who depend not upon their own strength, but the abilities of others, employ to support their authority: for he was perfectly skilled in all the ways of men; and transacted every thing of consequence in his own person, without the interposition of others.

He had the perfect secret of extinguishing envy; and thought it proper in his proceedin-

to secure this effect, though with some diminution of his dignity. For being wholly bent upon real power, he almost constantly declined, and contentedly postponed all the empty show, and gaudy appearance of greatness; till at length, whether satiated with enjoyment, or corrupted by flattery, he affected even the ensigns of royalty; the style and diadem of a king: which proved his ruin. He entertained the thought of dominion from his very youth: and this was easily suggested to him by the example of Sylla, the affinity of Marius, the emulation of Pompey, and the corruption and troubles of the times. But he paved his way to it in a wonderful manner: first, by a popular and seditious, and afterwards by a military and imperial force. For at the entrance he was to break through the power and authority of the senate; which remaining entire, there was no passage to an immoderate and extraordinary sovereignty. Next, the power of Crassus and Pompey was to be subdued; which could not be but by arms. And therefore, like a skilful architect of his own fortune, he begun and carried on his first structure by largesses; by corrupting the courts of justice; by renewing the memory of Caius Marius, and his party; whilst most of the senators and nobility were of Sylla's faction: by the Agrarian

laws; by seditious tribunes, whom he instigated; by the fury of Catiline, and his conspirators, whom he secretly favoured; by the banishment of Cicero, upon whom the authority of the senate turned; and other the like artifices: but what finished the affair, was the alliance of Crassus and Pompey, joined with himself.

Having thus secured all matters on this side, he directly turned to the other; he was now made proconsul of Gaul for five years, and afterwards continued for five more; he was furnished with arms, legions, and commanded a warlike province, adjacent to Italy. For he knew, that after he had strengthened himself with arms, and a military power, neither Crassus nor Pompey could make head against him; the one trusting to his riches, the other to his fame and reputation; the one decaying in age, the other in authority; and neither of them resting upon true and solid foundations. And all this succeeded to his wish; especially as he had bound, and obliged all the senators, magistrates, and those who had any power, so firmly to himself, by private benefits, that he feared no conspiracy, or combination against his designs; till he had openly invaded the state. And though this was ever his scheme, and at last put in execution, yet he did not unmask; but what by the

reasonableness of his demands, his pretences of peace, and moderating his successes, he turned the whole load of envy upon the opposite party; and appeared to take arms of necessity, for his own preservation and safety. The emptiness of this pretence manifestly appeared, when the civil wars were ended; all his rivals, that might give him any disturbance, slain; and he possessed of the regal power: for now he never once thought of restoring the republic; nor so much as pretended it. Which plainly shewed, as the event confirmed, that his designs were all along upon the sovereignty; and accordingly he never seized occasions as they happened, but raised and worked them out himself.

His principal talent lay in military matters; wherein he so excelled, that he could not only lead, but mould an army to his mind. For he was as skilful in governing men's passions, as in conducting affairs; and this he did not by any ordinary discipline, that taught his soldiers obedience, stung them with shame, or awed them by severity; but in such a manner, as raised a surprising ardour and alacrity in them, and made them confident of victory and success; thus endearing the soldiery to him, more than was convenient for a free-state. And as he was well versed in war of all kinds, and as he joined civil

and military arts together, nothing could come so suddenly upon him, but he had an expedient ready for it; nothing so adverse, but he drew some advantage from it.

He had a due regard to his person; for in great battles he would sit in his pavilion, and manage all by adjutants. Whence he received a double advantage; as thus coming the seldomer in danger; and in case of an unfortunate turn, could animate and renew the fight, by his own presence, as by a fresh supply. In all his military preparations he did not square himself to precedents only; but ever with exquisite judgment, took new measures, according to the present exigence.

He was constant, singularly beneficent, and indulgent in his friendships: but made such choice of friends, as easily shewed that he sought for those who might forward, and not obstruct his designs. And as he was both by nature and habit led, not to be eminent among great men, but to command among inferiors, he made friends of mean and industrious persons, to whom he alone gave law. As for the nobility, and his equals, he contracted friendship with them just as they might serve his turn; and admitted none to his intimacies, but such whose whole expectations centered upon him.

He was tolerably learned; but chiefly in what related to civil policy. For he was well versed in history; and perfectly understood both the edge and weight of words: and because he attributed much to his good stars, he affected to be thought skilful in astronomy. His eloquence was natural to him, and pure.

He was given to pleasures, and profuse in them; which served at his first setting out as a cloak to his ambition: for no danger was apprehended from one of this cast. Yet he so governed his pleasures, that they were no prejudice to himself, nor business; but rather whet than blunted the vigour of his mind. He was temperate in diet; not delicate in his amours; and pleasant and magnificent at public shews.

This being his character, the same thing at last was the means of his fall, which at first was a step to his rise; viz. his affectation of popularity: for nothing is more popular than to forgive our enemies. Through which virtue, or cunning, he lost his life.

AUGUSTUS CÆSAR.

IF ever mortal had a great, serene, well-regulated mind, it was Augustus Cæsar: as appears by the heroical actions of his early youth. For men of a turbulent nature commonly pass their youth in various errors; and in their middle age, first begin to shew themselves; but those of a sedate and calm disposition may shine even in the bud. And as the perfection of the mind, like that of the body, consists in health, gracefulness, and strength; in the latter he was inferior to his uncle Julius; but in beauty and health of mind superior. For Julius Cæsar being of a restless, discomposed spirit, as those generally prove who are troubled with the falling-sickness, yet cleared the way to his own ends, with the utmost address and prudence. His error was the not rightly fixing his ends; but with an insatiable and unnatural appetite still pursuing farther views. Whereas Augustus, sober and mindful of his mortality, seemed to have thoroughly weighed his ends; and laid them down in admirable order. For first he desired to have the sovereign rule; next he endeavoured to appear worthy of it; then thought it but reasonable, as a man, to enjoy his exalted fortune;

and lastly, he turned his thoughts to such actions, as might perpetuate his name, and transmit some image and effect of his government to futurity. Hence in his youth he affected power; in his middle age, dignity; in his decline of life, pleasure; and in his old age, fame, and the good of posterity.

KING HENRY VII.

THIS king was that kind of miracle, which affects wise men; but does not strike the ignorant. There are numerous particulars, both in his virtues and his fortune, not so fit for common-place, as for grave and prudent observation.

He was certainly religious, both in his temper and behaviour. And as he could see clearly, for those times, into superstition; so he would be blinded now and then through policy. He promoted ecclesiastics; and was tender in the privilege of sanctuaries, though they caused him so much mischief. He built and endowed many religious houses, besides his memorable hospital of the Savoy: yet he was a great alms-giver in secret; which shews, that his works in public, were dedicated to God's glory, not his own.

He always professed to love and seek peace; and it was his usual preface in his treaties, "That when Christ came into the world, peace was sung; and when he went out of it, peace was bequeathed. This could not be imputed to fear, or softness in him, being a martial and active man; but was doubtless a truly christian and moral virtue. Yet he knew the way to peace was not to seem too desirous of it: and therefore he would frequently raise reports, and feign preparations for war, till he had mended the conditions of peace.

It was also remarkable, that being so great a lover of peace, he should be so successful in war. For both his foreign and domestic wars were so fortunate, that he never knew a disaster. The war at his coming in, and the rebellions of the Earl of Lincoln, and the Lord Awdley, he terminated by victory; the wars of France and Spain by peace, sought at his hands: the war of Britain, by the accidental death of the duke: the insurrection of the Lord Lovel; and that of Perkin at Exeter; and in Kent, by the flight of the rebels, before they came to blows: so that his felicity in arms was still peculiar and inviolate; perhaps chiefly because in suppressing rebellions he ever appeared in person. The first of the battle he would sometimes leave to his

lieutenants; reserving himself to second the onset: but he was ever in some part of the action. Yet this proceeded not from warmth or bravery in him, but partly from a distrust of others.

He always greatly countenanced the laws of the kingdom, and would seem to maintain them by his own authority; though this he did, without any way falling short of his ends, for he held the reins of the laws so commodiously, as to lose no part either of his revenue or prerogative. And yet, as he would sometimes wind up the laws to his prerogative; so he would, at others, purposely lower his prerogative to his parliament. For though the regulation of the mint, treaties of peace, and the affairs of the army, are matters of absolute right, yet he would often refer these to parliament.

Justice was well administered in his time; except where the king was party; and excepting also, that the privy-council intermeddled too much in cases of meum and tuum. For the council was then a mere court of justice; especially in the beginning of his reign. But in that part of justice and policy, which is durable, and carved, as it were, in brass, and marble, viz. The making of good laws, he greatly excelled.

His justice also was mixed with mercy; for in his reign but three of the nobility suffered capi-

tally; viz. the Earl of Warwick, the Lord Chamberlain, and the Lord Awdley. Though the two former were as numbers, in respect to the virulence and hatred of the people. But never were such great rebellions known to be expiated with so little blood, shed by the sword of justice, as the two extraordinary ones of Exeter and Blackheath. His general pardons to the rebels ever went both before and after his sword. But then he had a strange method of interchanging ample, and unexpected, pardons with severe executions. Which, considering his wisdom, could not be attributed to any inconstancy, or wavering; but either to some secret reason; or to a certain rule he had prescribed himself, to try both corrosives and lenitives, by turns.

But the less blood he drew, the more treasure he usually took: and, as some maliciously construed it, he was sparing in the one, that he might squeeze the more in the other: for to have taken both, would indeed have been intolerable. Doubtless he was naturally inclined to hoarding; and admired riches too much for one in so high a sphere. And indeed he was touched with remorse at his death, for having oppressed his people, and extorted money, by ways of all kinds. This excess of his had, at that time, many interpretations. Some were of opinion, that the

perpetual rebellions wherewith he had been harassed, drove him to hate his people; some, that it tended to abate the fierceness of his subjects, by keeping them low; others, that he intended to leave a golden fleece to his son; and others, in fine, that he had some secret design of a foreign war. But those, perhaps, come nearest the truth, who impute it to nature, years, peace, and a mind taken up with no other ambition, or pursuit. Whereto may be added, that having frequent occasion to observe the necessities and shifts which other princes were drove to for money; this strongly shewed him the felicity that attends full coffers.

In expending of treasure, he kept this rule, never to spare any charge his affairs required. In his buildings he was magnificent; in his rewards close-handed: so that his liberality extended rather to what regarded himself, and his own memory, than to the rewarding of merit.

He was of a high and exalted mind; a lover of his own opinion, and his own way; as one that revered himself, and would reign alone. Had he been a private man, doubtless he would have been termed proud. But in a wise prince, it was no more than keeping a just and due distance between himself and his subjects; which he constantly did towards all; not admitting

any one a near approach, either to his authority, or secrets. For he was governed by none about him. His consort, the queen, who had blessed him with several children, and with a crown also, though he would not acknowledge it, could do little with him. His mother he indeed reverenced much; but seldom admitted her to a share of his counsels. He had no person agreeable to him for conversation; unless we should account for such, bishop Fox and Bray and Empson; because they were frequently with him: but it was as the tool is with the workman. He had as little vain-glory as any other prince; though without any diminution of state and majesty, which he ever kept up to the height; being sensible, that the reverence of majesty holds the people in obedience: whilst vain-glory, if rightly considered, prostitutes princes to popular breath.

He was just and constant to his confederates, but close and cautious. He searched into them so much, yet kept himself so close, and reserved, that they stood as it were in the light to him, and he in the dark to them. But this was carried without any appearance of secrecy; and rather with the shew of frankness and familiarity, as one who communicated his own affairs to others, and at the same time, enquired into theirs.

As for the little envies and emulations, which usually pass between princes, to the detriment of their affairs; he had nothing of them; but went earnestly and substantially about transacting his business. His reputation, though great at home, was still greater abroad. For foreigners, who could not see the conduct, and particulars passages of his affairs, but only the conclusions and general issues of them, observed that he was ever in strife, aud ever superior. It was partly occasioned also by the letters and relations of foreign ambassadors, who attended his court in great numbers; for these he not only pleased by courtesy, reward, and familiar conversation, but also raised their admiration, by discovering an universal knowledge of the affairs of Europe. Which, though he had chiefly drawn from the ambassadors themselves, and their informations, yet what he had gathered from them all, seemed extraordinary to every particular. So that they always wrote to their superiors in high terms, of his wisdom, and policy. Nay, when returned to their several countries, they frequently gave him intelligence by letter, of all occurrences that happened worthy of note; such a talent he had, at ingratiating himself with foreign ministers.

He was solicitous to procure, by all methods

intelligence from every quarter; for which end, he not only used the industry of foreign ministers, residing here, and of his own pensioners, which he kept at the court of Rome, and the courts of other princes; but the vigilance likewise of his own ambassadors abroad. And with this view, his instructions were exact, even to curiosity, and orderly digested in articles; more of which generally regarded enquiry than negotiation: and required distinct and particular answers.

As for his emissaries, which he secretly employed both at home and abroad, to discover what practices and conspiracies were on foot against him; they seem, in his case, to have been exceedingly necessary: he had so many moles, as it were, perpetually at work, to undermine him. Neither can this be accounted unlawful. For if spies are approved in war, against lawful enemies, much more against conspirators and traitors. His industry, in thus employing emissaries, had this good effect, that as many conspiracies were detected by their means; so the fame and suspicion of his spies, doubtless kept many others from being attempted,

He was no uxorious husband, nor indulgent; yet complaisant, companionable, and free from jealousy. He was affectionate to his children.

and careful of their education; for he aspired to procure their advancement: he was careful also, that all the honour and respect becoming their quality, should be paid them; but not greatly desirous, to have them exalted in the eyes of the people.

He referred most of his business to his privy-council, and often presided among them in person; well knowing this to be the right and solid way both to strengthen his authority, and inform his judgment. To which end also he was patient of their liberty, as well in advising, as voting, till he had declared his own opinion; which he usually reserved to the end of the debates.

He kept a strict hand upon the nobility; and chose rather to advance to his service such clergymen and lawyers, who were more obsequious to him, and less gracious with the people; which made for his authority, but not for his safety: insomuch that I am fully persuaded, this method of his was a principal cause of the frequent commotions that happened in his reign; because the nobility, though loyal and obedient, did not chearfully co-operate with him; but left his designs rather to take their chance, than urged their accomplishment.

He was never afraid of his servants and ministers, though men of the brightest parts and

greatest abilities; as Lewis XI. was. But on the contrary, made use of the most eminent of his time: otherwise his affairs could not have prospered as they did. Neither did he care how crafty and subtile they were, for he thought himself even here their superior.

And as he shewed great judgment in the choice of his ministers, he was as constant in protecting those he had once chose. It is strange, that though he was a dark, close prince, excessively suspicious, his reign turbulent, and full of conspiracies; yet in twenty-four years, he never displaced, or discomposed counsellor, or near servant, except Stanley, the Lord Chamberlain.

For the disposition of his subjects towards him; as there are three affections, which naturally tye the hearts of the people to their sovereign; viz. love, fear, and reverence; he had their reverence in a high degree; much of their fear; but so little of their love, as to be beholden to the other two, for his security.

He was a sober, serious, thoughtful prince, full of cares and secret observations; and had notes and memorandums always ready by him; written with his own hand; particularly relating to the choice of persons for employ; those he designed to reward, enquire about, or beware of; those who were nearly linked together, ei-

ther by faction, or good offices; those who had formed into parties, and the like; thus keeping a kind of diary of his own thoughts. There goes a pleasant story, that his monkey, provoked to it, as was imagined, by one of the bedchamber, once tore his principal note-book to pieces, as it lay somewhat carelessly exposed: whereat the court, which liked not that scrupulous diligence, were ready to burst with laughter.

But though he abounded in apprehensions and suspicions, yet as he easily took them up, he as easily laid them down; and made them submit to his judgment: Whence they were rather troublesome to himself, than dangerous to others. Yet it must be acknowledged, that his thoughts were so numerous, and so complicated, that they could not often consist together; but that which was of service one way, proved hurtful another. Neither was it possible for him to be wise, or happy, so much beyond the condition of mortals, as always to weigh things truly, in their exact proportions. Certainly, the rumour that raised him so many, and so great troubles, viz. That the Duke of York was saved, and still alive, did, at the beginning, get strength and credit from himself; being desirous of having it believed, in hopes of softening the

imputation of reigning in his own right, and not in the right of his wife.

He was affable, and soothingly eloquent; so as to use strange sweetness and insinuation in his speech; where he would persuade, or effect any thing that he earnestly desired.

He was rather studious than learned; reading, for the most part, books wrote in French. Yet he understood Latin, as appears from hence, that Cardinal Hadrian, and others who were well acquainted with French, yet always wrote to him in Latin.

For his pleasures, there is no mention found of them. Yet by his instructions to Marsin and Stile, with regard to the Queen of Naples, it appears he could very skilfully interrogate upon beauty, and the parts thereof. He did by pleasures, as great princes do by banquets of sweetmeats: look upon them a little, and go away. For never was prince more immersed in his own affairs; being wholly taken up with them, and himself wholly in them: insomuch, that at jests, tournaments, or other mock-fights, masks, and the like public assemblies, he seemed to be rather a princely and grave spectator, than much delighted.

Doubtless, as in all other men, and particularly in kings, his fortune influenced his nature; and

his nature again influenced his fortune. He ascended to the throne, not only from a private fortune, which might teach him moderation; but from the fortune of an exiled man, which had given him the spurs of industry and sagacity. And his government being rather prosperous than calm, had raised his confidence by success; but in the mean time almost corrupted his nature by perpetual vexations. This prudence, by his frequent escapes from dangers (which had taught him to rely upon extempore remedies) was turned rather into a dexterity at extricating himself from misfortunes, when they pressed him, than into a foresight to prevent and remove them at a distance. Thus, the eyes of his mind were not unlike the corporeal eyes of those who see strong near at hand, but weak at a distance. For his prudence was suddenly roused by the occasion; and the more, if the occasion were sharpened by danger.

These influences his fortune had upon his nature; nor were there wanting on the other hand, certain influences, which his nature had upon his fortune. For whether it were the shortness of his foresight, or the obstinacy of his will, or the dazzling of his suspicions, or what; certain it is, that the perpetual troubles in his fortune, ould not have arisen without some great defects

in his nature, and rivetted errors in the radical constitution of his mind: which he was obliged to salve and correct by a thousand little industries, and arts; all which best appear in the history itself.

But to take him with all his defects, and compare him with the kings of france and Spain, his contemporaries, we shall find him more politic than Lewis XII. of France; and more faithful and sincere than Ferdinando of Spain. But to change Lewis XII. for Lewis XI. who reigned a little before; the comparisons will be more suitable, and the parallels more exact. For these three, Lewis XI. Henry, and Ferdinando, may be esteemed as the three magi among the kings of that age. To conclude, if this king did no greater matters, it was his own fault; for what he undertook, he compassed.

He was comely in person; a little above the just stature; well and straight limbed; but slender. His countenance struck a reverence, somewhat resembling that of an ecclesiastic. And as it was not gloomy or supercilious, so neither was it winning or pleasing; but like the face of one composed and sedate in mind: though this was not happy for the painter; as being best when he spoke.

He had the fortune of a true christian, as well as of a great king; in living exercised, and dying penitent. So that he triumphed victoriously, as well in spirituals as temporals: and succeeded in both conflicts, that of sin, and that of the cross.

He was born at Pembroke Castle; and buried at Westminster, in one of the noblest monuments of Europe, both for the chapel, and the sepulchre. So that he dwells more richly dead, in the monument of his tomb, than when alive, either at Richmond, or any other of his palaces. I could wish he might do the like in this monument of his fame.

QUEEN ELIZABETH.

BOTH nature and fortune conspired to render Queen Elizabeth the ambition of her sex, and an ornament to crowned heads. This is not a subject for the pen of a monk, or any such cloistered writer. For such men, though keen in style, are attached to their party; and transmit things of this nature unfaithfully to posterity. Certainly this is a province for men of the first rank; or such as have sate at the helm of states; and been acquainted with the depths and secrets of civil affairs.

All ages have esteemed a female government a rarity; if prosperous, a wonder; and if both long and prosperous, almost a miracle. But this lady reigned forty-four years compleat; yet did not out-live her felicity. Of this felicity I purpose to say somewhat; without running into praises: for praise is the tribute of men, but felicity the gift of God.

And first, I account it a part of her felicity, that she was advanced to the throne, from a private fortune. For it is implanted in the nature of men, to esteem unexpected success an additional felicity. But what I mean, is, that princes educated in courts, as the undoubted

heirs of a crown, are corrupted by indulgence; and thence generally rendered less capable, and less moderate in the management of affairs.—And therefore we find those the best rulers, who are disciplined by both fortunes. Such was, with us, King Henry VII. and with the French, Louis XII. who both of them came to the crown almost at the same time; not only from a private, but also from an adverse and rugged fortune: and the former proved famous for his prudence; the other for his justice. In the same manner this princess also had the dawn of her fortune chequered; but in her reign it proved unusually constant and steady. From her birth, she was entitled to the succession; but afterwards disinherited, and then postponed. In the reign of her brother, her fortune was more favourable and serene; but in the reign of her sister, more hazardous and tempestuous. Nor was she advanced on a sudden, from a prison to the throne; which might have made her haughty and vindictive; but being restored to her liberty, and still growing in hopes, at last in a happy calm, she obtained the crown without opposition or competitor. And this I mention to shew, that divine providence intending an excellent princess, prepared and advanced her by such degrees of discipline.

Nor ought the misfortunes of her mother to sully the glory of her birth; especially, because 'tis evident that King Henry VIII. was engaged in a new amour before his rage kindled against Queen Anne; and because the temper of that king is censured by posterity, as exceedingly prone both to amours and jealousies, and violent in both, even to the effusion of blood. Add to this, that she was cut off through an accusation manifestly improbable, and built upon slight conjectures, as was then secretly whispered; and Queen Anne herself protested her innocence, with an undaunted greatness of mind, at the time of her death. For, by a faithful and generous messenger, as she supposed, she, just before her execution, sent this message to the king; "That his majesty constantly held on in his purpose of heaping new honours upon her; for that first he raised her from a private gentlewoman, to the honour of a marchioness; next advanced her into a partnership of his bed, and kingdom; and when now there remained no higher earthly honour, he designed to promote her an innocent to the crown of martyrdom." But the messenger durst not carry this to the king, now plunged in a new amour: though fame, the asserter of truth, has transmitted it to posterity.

Again; it is no inconsiderable part of Queen Elizabeth's felicity, that the course of her reign was not only long, but fell within that season of her life, which is fittest for governing. Thus she begun her reign at twenty-five; and continued it to the seventieth year of her age. So that she neither felt the harshness of a minority, the checks of a governor's power, nor the inconveniencies of extreme old age; which is attended with miseries enough in private men; but in crowned heads, besides the ordinary miseries, it usually occasions a decay of the government, and ends with an inglorious exit. For scarce any king has lived to extreme old age, without suffering some diminution in empire and esteem. Of this we have an eminent instance in Philip the second, king of Spain; a potent prince, and admirably versed in the arts of government; who, in the decline of life, was thoroughly sensible of this misfortune: and therefore wisely submitted to the necessity of things; voluntarily quitted his acquisitions in France, established a firm peace with that kingdom, and attempted the like with others; that so he might leave all quiet and composed to his successor. Queen Elizabeth's fortune, on the contrary, was so constant and fixed, that no declension of affairs followed her lively, though declining age: nay, for an assured

monument of her felicity, she died not till the rebellion of Ireland ended in a victory, lest her glory should otherwise have appeared any way ruffled or incomplete.

It should likewise be considered over what kind of people she reigned. For had her empire fallen among the Palmyrenians, or in soft unwarlike Asia, it had been a less wonder; since a female in the throne would have suited an effeminate people: but in England, a hardy military nation, for all things to be directed and governed by a woman, is a matter of the highest admiration.

Yet this temper of her people, eager for war, and impatient of peace, did not prevent her from maintaining it all her reign. And this peaceable disposition of hers joined with success, I reckon one of her chiefest praises: as being happy for her people, becoming her sex, and a satisfaction to her conscience. Indeed about the tenth year of her reign, there rose a small commotion in the north of her kingdom; but it was presently suppressed. The rest of her reign passed in a secure and profound peace. And I judge it a glorious peace, for two reasons; which, though they make nothing to its merit, yet contribute much to its honour. The one, that it was rendered more conspicuous and illustrious, by the

calamities of our neighbours, as by so many flames about us. The other, that the blessings of peace were not unattended with the glory of arms; since she not only preserved, but advanced the honour of the English name for martial greatness. For what by the supplies she sent into the Netherlands, France, and Scotland; the expeditions by sea to the Indies; and some of them round the world; the fleets sent to infest Portugal, and the coasts of Spain; and what by the frequent conquests and reductions of the Irish rebels; we suffered no decay in the ancient military fame and virtue of our nation.

It is likewise a just addition to her glory, that neighbouring princes were supported in their thrones by her timely aids; and that suppliant states, which, through the misconduct of their kings, were abandoned, devoted to the cruelty of their ministers, the fury of the multitude, and all manner of desolation, were relieved by her.

Nor were her counsels less beneficent than her supplies; as having so often interceded with the King of Spain, to reconcile him to his subjects in the Netherlands, and reduce them to obedience, upon some tolerable conditions. And she with great sincerity importuned the Kings of France, by repeated admonitions, to observe their own edicts, that promised peace to their

subjects. It is true, her advice proved ineffectual: for the common interest of Europe would not allow the first; lest the ambition of Spain being uncurbed, should fly out, as affairs then stood, to the prejudice of the kingdoms and states of Christendom: and the latter was prevented by the massacre of so many innocent men, who, with their wives and children, were butchered in their own houses, by the scum of the people, armed and let loose, like so many beasts of prey, upon them by public authority. This blood-shed cried aloud for vengeance, that the kingdom stained by so horrible an impiety, might be expiated by intestine slaughter. However, by interposing, she performed the part of a faithful, prudent, and generous ally.

There is also another reason for admiring this peaceful reign, so much endeavoured and maintained by the queen; viz. that it did not proceed from any disposition of the times, but from her own prudent and discreet conduct. For as she struggled with faction at home, upon account of religion, and as the strength and protection of this kingdom was a kind of bulwark to all Europe, against the extravagant ambition and formidable power of Spain, there wanted no occasions of war: yet with her force and policy, she surmounted these difficulties. This appear-

ed by the most memorable event, in point of felicity, that ever happened through the whole course of affairs in our time. For when the Spanish Armada entered our seas, to the terror of all Europe, and with such assurance of victory, they took not a single boat of ours, nor hurnt the least cottage, nor touched our shore; but were defeated in the engagement, dispersed by a miserable flight, and frequent wrecks; and so left us at home in the enjoyment of an undisturbed peace,

Nor was she less happy in disappointing conspiracies, than in subduing the forces of her open enemies. For several plots against her life were fortunately discovered, and defeated. And yet upon this account, she was not the more fearful or anxious of her person; for she neither doubled her guards, nor confined herself to her palace, but appeared in public as usual; remembering her deliverance, but forgetting her danger.

The nature of the times wherein she flourished, must also be considered. For some ages are so barbarous and ignorant, that men may be as easily governed as sheep. But this princess lived in a learned and polite age; when it was impossible to be eminent without great parts, and a singular habit of virtue.

Again, female reigns are usually eclipsed by marriage; and all the praises thus transferred upon the husband: whilst those who live single, appropriate the whole glory to themselves. And this is more peculiarly the case of Queen Elizabeth; because she had no supporters of her government, but those of her own making: she had no brother, no uncle, nor any other of the royal family to partake her cares, and share in her administration. And for those she advanced to places of trust, she kept such a tight rein upon them, and so distributed her favours, that she laid each of them under the greatest obligation and concern to please her; whilst she always remained mistress of herself.

She was indeed childless, and left no issue behind her: which has been the case of many fortunate princes; as of Alexander the Great, Julius Cæsar, Trajan, &c. and is a disputed point; some taking it for a diminution of felicity, as if men could not be compleatly happy, unless blessed both in their own persons, and in their children; and others accounting it the perfection of felicity; which then alone seems to be compleat, when fortune has no more power over it: which, if children are left behind, can never be the case.

She had likewise her outward embelishments;

a tall stature, a graceful shape and make, a most majestic aspect, mixed with sweetness, and a happy state of health. Besides all this, she was strong and vigorous to the last; never experienced a reverse of fortune, nor felt the miseries of old age; and obtained that complacency in death, which Augustus Cæsar so passionately desired, by a gentle and easy exit. This is also recorded of that excellent emperor Antoninus Pius; whose death resembled a sweet and gentle slumber. So likewise in the distemper of the queen, there was nothing shocking, nothing presaging, nothing unbecoming of human nature. She was not desirous of life, nor impatient under sickness, nor racked with pain. She had no dire or disagreeable symptom; but all things were of that kind, as argued rather the frailty, than the corruption or disgrace of nature. Being emaciated by an extreme dryness of body, and the cares that attend a crown, and never refreshed with wine, or with a full and plentiful diet, she was, a few days before her death, struck with a dead-palsy; yet, what is unusual in that distemper, retained, in some degree, her speech, memory, and motion. In this condition she continued but a little while; so that it did not seem the last act of her life, but the first step to her death. For to live long

after our faculties are impaired, is accounted miserable; but for death to hasten on with a gradual loss of the senses, is a gentle, a pleasing, and easy dissolution.

To fill up the measure of her felicity, she was exceeding happy, not only in her own person, but also in the abilities, and virtues of her ministers of state. For she had the fortune to meet with such, as perhaps this island never before produced at one time. But God, when he favours princes, raises up, and adorns the spirits of their ministers also.

There remain two posthumous felicities; which may seem more noble and august, than those that attended her living: the one is that of her successor, and the other of her memory. For she had such a successor, who, though he may exceed and eclipse her greatness, by his masculine virtues, his issue, and a new accession of empire; yet is zealous of her name and glory; and gives a kind of perpetuity to her acts; having made little change either in the choice of ministers, or the method of government: so that a son rarely succeeds a father with less alteration or disturbance.

As for her memory, it is so much in the mouths, and so fresh in the minds of men, that envy being extinguished, and her fame light up

by death, the felicity of her memory seems to vie with the felicity of her life. For if through party-zeal, or difference in religion, a factious report be spread abroad; it is neither true, nor can be long-lived. And for this reason in particular, I have made the present collection of her felicities, and the marks of the Divine Favour towards her; that no malicious person might dare to curse, where God has so highly blessed.

If it should be here objected, as Cicero objected to Cæsar, "We have matter enough to admire, but would gladly see something to praise;" I answer, that true admiration is a superlative degree of praise. Nor could that felicity above-described be the portion of any, but such as are remarkably supported and indulged by the Divine Favour; and, in some measure, worked it out by their own morals and virtues. I shall, however, add a word or two as to the morals of the queen; but only in such particulars, as have occasioned some malicious tongues to traduce her.

As to her religion; she was pious, moderate, constant, and an enemy to novelty. And for her piety, though the marks of it are most conspicuous in her acts and administrations; yet there were visible marks of it, both in the course

of her life, and her ordinary conversation. She was seldom absent from divine service, and other duties of religion, either in her chapel, or closet. She was very conversant in the scriptures, and writings of the fathers, especially St. Augustine. Herself composed certain prayers upon some emergent occasions. When she mentioned the name of God, though in ordinary discourse, she generally added the title of Creator; and composed both her eyes and countenance to some sort of humility and reverence; which I have myself often observed.

As to what some have given out, that she was altogether unmindful of mortality, so as not to bear the mention of old-age to death; it is absolutely false: for several years before her death, she would often facetiously call herself 'The old woman;' and discourse about what kind of epitaph she liked: adding, that she was no lover of pompous titles; but only desired her name might be recorded in a line or two, which should briefly express "Her name, her virginity, the time of her reign, the reformation of religion under it, and her preservation of peace." It is true, in the flower of her age, being importuned to declare her successor, she answered, "That she could by no means endure a shroud to be held before her eyes, while she was living."

And yet some years before her death, at a time when she was thoughtful, and probably meditating upon her mortality, one of her familiars mentioning in conversation, that several great offices and places in the state were kept vacant too long, she rose up and said, with more than ordinary warmth, "That she was sure her place would not be long vacant."

As to her moderation in religion, it may require some pause; because of the severity of the laws, made against her subjects of the Romish persuasion: but I will mention such things as were well known, and carefully observed by myself. It is certain, she was in her sentiments, averse to the forcing of conscience: yet, on the other hand, she would not suffer the state to be endangered, under the pretence of conscience and religion. Hence she concluded, that to allow a liberty and toleration of two religions, by public authority, in a military, and high-mettled nation, that might easily fall from difference in judgment to blows, would be certain destruction. Thus in the beginning of her reign, when all things looked suspicious, she kept some of the prelates, who were of a more turbulent and factious spirit, prisoners at large; though not without the warrant of the law: but to the rest of both orders, she used no severe inquisition, but

protected them, by a generous connivance. And this was the posture of affairs at first. Nor did she abate much of this clemency, though provoked by the excommunication of Pope Pius Quintus; which might have raised her indignation, and driven her to new measures; but still she retained her own generous temper. For this prudent and couragious lady was not moved with the noise of those terrible threats; being secure of the fidelity and affection of her subjects, and of the inability of the popish faction within the kingdom to hurt her, unless seconded by a foreign enemy.

But about the three and twentieth year of her reign, the face of affairs changed. This difference of the times is not artfully feigned, to serve a turn; but stands expressed in the public records, and engraven, as it were, in leaves of brass. For before that year, none of her subjects, of the Romish religion, had been punished, with any severity, by the laws formerly enacted. But now the ambitious and monstrous designs of Spain, to conquer this kingdom, began by degrees, to open themselves. A principal part of which was, by all public ways and means, to raise a faction, in the heart of the kingdom, of such as were disaffected, and desirous of innovation; in order to join the enemy upon the in-

vasion. Their hopes of effecting this, were grounded upon the difference there was amongst us in religion; whence they resolved to labour this point effectually. And the seminaries at that time budding, priests were sent into England, to sow and raise up an affection for the Romish religion; to teach and inculcate the validity of the pope's excommunication, in releasing subjects from their allegiance; and to awaken and prepare mens minds to an expectation of a change in the government.

About the same time Ireland was attempted by an invasion; and the name and government of Queen Elizabeth, vilified and traduced by scandalous libels: in short, there was an unusual swelling in the state; the prognostick of a greater commotion. Yet I will not affirm, that all the priests were concerned in the plot; or privy to the designs then carrying on: but only that they were corrupt instruments of other men's malice. It is however attested by the confession of many, that almost all the priests sent into this kingdom from the year abovementioned, to the thirtieth year of the queen, wherein the design of Spain, and the Pope, was put in execution by the armada, had it in their instructions, among other parts of their function, to insinuate, "That affairs could not pos-

sibly continue long as they were; that they would soon put on a new face; that the Pope and the Catholic princes would take care for the English state, provided the English were not their own hindrance. Again, some of the priests had manifestly engaged themselves in plots and contrivances, which tended to the undermining and subverting of the government: and was the strongest proof, the whole train of the plot was discovered by letters intercepted from several parts; wherein it was expressly mentioned, "That the vigilancy of the queen and her council, in respect of the catholics, would be baffled; because the queen only watched, that no nobleman, or person of distinction, should rise to head the catholic faction; whereas the design they laid was, that all things should be disposed and prepared by private men, of an inferior rank, without their conspiring or consulting together; but wholly in the secret way of confession." And these were the artifices then practised, which are so familiar and customary to that order of men.

In such an impending storm of dangers, the queen was obliged, by the law of necessity, to restrain such of her subjects as were disaffected and rendered incurable by these poisons; and who in the mean time began to grow rich by retirement, and exemption from public offices;

and accordingly some severer laws were enacted. But the evil daily increasing, and the origin thereof being charged upon the seminary priests, bred in foreign parts, and supported by the bounty and benevolence of foreign princes, the professed enemies of this kingdom; which priests had lived in places, where the name of Queen Elizabeth was always tacked to the titles of heretic, excommunicated, and accursed; and who, though they themselves were not engaged in the treasonable practices, yet were known to be the intimate friends of such as had set their hands to villanies of that kind; and who, by their arts and poisonous insinuations, had infected the whole body of the catholics, which before was less malignant; there could no other remedy be found, but the forbidding such persons all entrance into this kingdom, upon pain of death: which at last, in the twenty-seventh year of her reign, was accordingly enacted.

Yet the event itself, which followed soon after, when so violent storm fell upon this kingdom, with all its weight, did not, in the least, abate the envy and hatred of these men; but rather increased it; as if they had divested themselves of all affection to their country. And afterwards, indeed, though our fears of Spain, the occasion of this severity, were abated; yet

because the memory of the former times was deeply imprinted in men's minds; and because it would have looked like inconstancy, to have abrogated the laws already made; or remissness to have neglected them; the very constitution and nature of affairs suggested to the queen, that she could not with safety return to the state of things, that obtained before the three and twentieth year of her reign.

To this may be added, the industry of some to increase the revenues of the Exchequer; and the earnestness of the ministers of justice, who usually regard no other safety of their country, but what consists in the law; both which called loudly for the laws to be put in execution. However, the queen, as a specimen of her good-nature, so far took off the edge of the law, that but a few priests, in proportion, were put to death. And this, we say, not by way of defence, for the case needs none; as the safety of the kingdom turned upon it; and as the measure of all this severity came far short of those bloody massacres, that are scarce fit to be named among christians, and have proceeded rather from arrogance and malice, than from necessity, in the catholic countries, and thus we think, we have made it appear, that the queen was moderate in the point of religion; and that the change

which ensued, was not owing to her nature, but to the necessity of the times.

The greatest proof of her constancy in religion, and religious worship, is, that notwithstanding popery, which in her sister's reign had been strenuously established by public authority, and the utmost diligence, began now to take deep root, and was confirmed by the consent and zeal of all those in office, and places of trust; yet because it was not agreeable to the word of God, nor to the primitive purity, nor to her own conscience, she, with much courage, and with very few helps, exterpated and abolished it. Nor did she do this precipitantly, or in a heat; but prudently and seasonably: as may appear from many particulars; and among the rest, from a certain answer she occasionally made. For upon her first accession to the throne, when the prisoners, according to custom, were released; as she went to chapel, a courtier, who took a more than ordinary freedom, whether of his own motion, or set on by a wiser head, delivered a petition into her hand; and in a great concourse of people, said aloud; "That there were still four or five prisoners unjustly detained; that he came to petition for their liberty as well as the rest; and these were the four Evangelists, and the Apostle St. Paul, who had been long im-

prisoned in an unknown tongue, and not suffered to converse with the people." The queen answered, with great prudence, "That it was best to consult them first, whether they were willing to be released or no." And by thus striking a surprising question, with a wary, doubtful answer, she reserved the whole matter entirely in her own breast.

Nor yet did she introduce this alteration timorously, and by fits and starts, but orderly, gravely, and maturely; after a conference betwixt the parties, and calling a parliament: and thus at length, within the compass of one year, she so ordered, and established all things belonging to the church, as not to suffer the least alteration afterwards, during her reign. Nay, almost every session of parliament, her public admonition was, that no innovation might be made in the discipline or rites of the church. And thus much for her religion.

Some of the graver sort may perhaps aggravate her levities; in loving to be admired and courted, nay, and to have love-poems made on her; and continuing this humour longer than was decent for her years: yet to take even these matters in a milder sense, they claim a due admiration; being often found in fabulous narrations; as that of "A certain queen in the for

tunate islands, in whose court love was allowed, but lust banished." Or if a harsher construction can be put upon them, they are still to be highly admired; as these gaities did not much eclipse her fame, nor in the least obscure her grandeur, nor injure her government, nor hinder the administration of her affairs: for things of this sort are rarely so well tempered and regulated in princes.

This queen was certainly good and moral; and as such she desired to appear. She hated vice, and studied to grow famous by honourable courses. Thus, for example, having once ordered an express to be written to her ambassador, containing certain instructions, which he was privately to impart to the Queen-mother of France, her secretary inserted a clause for the ambassador to use, importing, "That they were two queens, from whose experience, and arts of government, no less was expected than from the greatest kings." She could not bear the comparison; but ordered it to be struck out; saying, "She used quite different arts and methods of government, from the queen-mother."

She was also not a little pleased, if any one by chance had dropt such an expression as this, "That though she had lived in a private station, her excellencies could not have passed unob-

served by the eye of the world." So unwilling was she, that any of her virtue, or praise, should be owing to the height of her fortune.

But if I should enter upon her praises, whether moral or political, I must either fall into a common-place of virtues, which will be unworthy of so extraordinary a princess; or if I would give them their proper grace and lustre, I must enter into a History of her Life; which requires more leisure, and a richer vein than mine. To speak the truth, the only proper encomiast of this lady is time; which, for so many ages as it has run, never produced any thing like her, of the same sex, for the government of a kingdom.

THE BEGINNING OF A HISTORY

OF

GREAT BRITAIN. *

BY the decease of Queen Elizabeth, the issue of King Henry VIII. failed; being spent in one generation, and three successions. For that king, though one of the goodliest persons of his time, yet left by his six wives but three children; who reigning successively, and dying childless, made place for the line of Margaret, his eldest sister, married to James IV. of Scotland. There succeeded, therefore, to the kingdom of England, James VI. then King of Scotland; descended of the same Margaret, both by father and mother; so that by an extraordinary event in the pedigree of kings, it seemed as if the divine Providence, to extinguish all envy, and note of a stranger, had doubled upon his person, within

* The design of the following specimen, or Beginning of the History of Great Britain, may be learnt from the author's letters to the Lord Chancellor, and the king himself, on this subject. See also *de Augment. Scientiar.* Sect. IV.

the circle of one age, the royal blood of England by both parents.

This succession drew the eyes of all men towards it; being one of the most memorable accidents that had appeared for a long time in the christian world. For the kingdom of France having been re-united the age before, in all the provinces thereof, which were formerly dismembred; and the kingdom of Spain, being of later date united, and made entire, by he annexing of Portugal, in the person of Philip II. there remained but this third and last union for balancing the power of these three great monarchies; and disposing of the affairs of Europe to a more assured and universal peace.

This event was the more admired, because the island of Great Britain, divided from the rest of the world, was never before united in itself under one king; notwithstanding the people are of one language; and not separated by mountains, or great waters: and notwithstanding also, that the uniting of them had been in former times industriously attempted, both by war and treaty.

It therefore seemed a manifest work of Providence, reserved for these times; insomuch that the vulgar conceived there was now an end to superstitious prophecies, (the belief of fools, but the talk sometimes of wise men;) and to

cient tacit expectation, which had by tradition been strongly infused into mens minds.* But as "The best divinations, and predictions, are the probable and political conjectures, and foresight of wise men;" so the foresight of King Henry VII. was now in all mens mouths; who, being one of the deepest, and most prudent princes in the world, had, upon the deliberation concerning the marriage of his eldest daughter into Scotland, shewed himself, by his discourse, sensible, and almost prescient of this event.

A concurrence likewise of several uncommon, external circumstances, gave great reputation to this succession. A king in the strength of his years; supported with great alliances abroad; established with royal issue at home; at peace with all the world; and practised in the government of such a kingdom, as might rather afford variety of accidents to a king, than corrupt him with affluence, or vain-glory; and one who, besides his universal capacity and judgment, was thoroughly versed in matters of religion, aud the church; which in these times, by the confused use of both swords, are become so intermixed

* The prophecy here meant, seems to be this: When HEMPE is spun, England's done. See the author's Essay on Prophecies.

with considerations of state, that most councils of sovereign princes, or republics, depend upon them.

But nothing filled foreign nations more with admiration, and expectation of this succession, than the wonderful and unexpected consent of all the subjects of England, to receive the king without the least scruple, pause, or question. For it had been generally dispersed by the fugitives beyond the seas, that after Queen Elizabeth's decease, there must follow in England nothing but confusions, interreigns, and perturbations of state, greater than the ancient calamities of the civil wars between the houses of Lancaster and York; as the dissensions were likely to be more mortal and bloody, when foreign competition should be added to domestic; and divisions in religion, to matters of title to the crown.

And in particular, Parsons, the Jesuit, under a disguised name, had, not long before, published an express treatise; wherein, whether his malice made him believe his own fancies; or whether he thought it the fittest way to move sedition, (like evil spirits, which seem to foretel the tempest they mean to raise;) he laboured to display and colour all the vain pretences and

dreams of succession he could devise: and had thus possessed many abroad, who knew not the affairs at home, with his vanities.

There were also within the kingdom divers persons, both wise and well-affected, who, though they questioned not the right, yet setting before themselves the waves of peoples hearts, guided no less by sudden and temporary winds, than by the natural course and motion of the waters, dreaded the event. For Queen Elizabeth being a princess of extreme caution, and yet one who loved admiration above safety; and knowing the declaration of a successor might, in point of safety, be disputable, but in point of admiration and respect, assuredly to her disadvantage; had from the beginning set it down for a maxim of state, to impose a silence as to the succession.* Nay, it was not only reserved as a secret of state, but restrained by severe laws; that no person should presume to give opinion, or argue about the same: so that though the evidence of the right drew all the subjects of the land to think one thing; yet the fear of the law, made no man privy to others thoughts. It therefore rejoiced all men to see so fair a morning of

* See the character of this queen.

a kingdom, and to be thoroughly secured against former apprehensions; as when a man wakes out of a frightful dream.

And thus not only the consent, but the applause and joy was infinite, and inexpressible, throughout the kingdom, upon this succession. The consent may be truly ascribed to the clearness of the right; but the general joy, alacrity, and gratulation, were the effects of differing causes. For Queen Elizabeth, although she had many virtues, and used many demonstrations, that might draw and knit the hearts of her people to her; yet carrying a close hand in gifts, and a high one in points of prerogative, did not fully content either her servants or subjects; especially in her later days, when the continuance of her reign, which extended to five and forty years, might discover in people their natural desire and inclination to change: so that a new court, and a new reign, were not unwelcome to many. Numbers rejoiced, and especially those of settled estates and fortunes, that their fears and uncertainties were blown over. Others, who had made their way with the king, or offered their service in the reign of the queen, thought now the time was come for which they had prepared: and generally all such as had any dependance upon the late Earl of Essex, (who

had mixed the service of his own ends, with the popular pretence of advancing the king's title,) thought their cause bettered.

Again, such as might suspect they had given the king any occasion of distaste, endeavoured by their forwardness and confidence, to shew it was but their firmness to the former government; and that those affections ended with the time. The papists fed their hopes, by comparing the case of the papists in England, under Queen Elizabeth, with that of the papists in Scotland, under the king; construing their condition in Scotland the less grievous, and forming conjectures of the king's government here accordingly: besides the comfort they ministred so themselves, from the memory of the queen his mother. The ministers, and those who stood for the presbytery, thought their cause sympathized more with the discipline of Scotland, than with the hierarchy of England; and so took themselves to be a degree nearer their desires. Thus all conditions of persons promised themselves some future advantage; which they might, perhaps, over-rate, according to the nature of hope; yet not without some probable ground of conjecture.

At this time also came forth in print the king's book, entitled Βασιλικον Δῶρον: containing mat-

ter of instruction to the prince his son, as to the office of a king; which book falling into every man's hand, filled the whole kingdom as with a good perfume, or incense, before the king's coming in: for being excellently written, and having nothing of affectation, it not only satisfied better than particular reports of the king's disposition; but far exceeded any formal or curious edict, or declaration, which could bave been devised, of that nature wherewith princes, in the beginning of their reign, usually grace themselves; or at least, express themselves gracious in the eyes of their people. * And thus much for the general state and constitution of mens minds upon this change: the actions themselves passed in the following manner. †

* The author seems to have wrote this specimen to oblige the king; to whom it was presented.

† For the continuation of the history here begun, see Burnet, Herbert, Thuanus, Larrey, &c.

SPECIMEN

OF

ANIMATED ASTRONOMY;

OR,

AN ESSAY TOWARDS A PHILOSOPHICAL HISTORY OF THE HEAVENS.

PREFACE.

THIS is an imperfect piece, and doubtless, never intended by the author to be published, till it had, in his usual manner, undergone a strict correction.

The original makes part of the Scripta, *or the author's Latin Posthumous Pieces published by Gruter; and is inconsiderately tacked to certain imperfect chapters of the* De Augmentis Scientiarum, *under the title of* Descriptio Globi Intellectualis. *The design, however, appears by the introduction, to have been completely formed in the mind of the author, though not executed in all its parts; nor perfectly indeed in any one. For the first part, which is the only one we have of it, wants the uses promised in the introduction. Had it been finished, it might have nobly supplied the "Animated Astronomy," set down for deficient in the* De Augmentis;* *and, as it now stands, it exhibits the whole plan, executes some considerable proportion, and instructs a less able architect to carry on the work.*

The author proceeds in the cautious way of enquiry, by questions, and arguments on both sides; without undertaking to determine any thing in a subject that lies so remote from direct experiment. This method has, perhaps, been too much neglected by writers in astronomy; for questions are in the power of the querist, and may gradually lead to great and solid discoveries; whilst a dogmatical procedure, pretending to over-rule things, is often frustrated, or falsified by farther enquiry.

* See the *de Augmentis Scientiarum*, Sect. IV.

SPECIMEN

OF

ANIMATED ASTRONOMY,* &c.

INTRODUCTION.

THE history of the celestial bodies should be simple, and unmixed with mens conceits, or opinions; and candidly drawn up, without any tincture of pre-occupation, or fondness for theory; so as, separately and nakedly, to exhibit those phenomena, which are, at present, bundled and dressed up into theories and systems. We would, therefore, have this history wrote in such a manner, as if no decree had passed; nor any thing been dogmatically asserted in all astronomy and astrology: And only the observations, in both, had been taken, and the experiments made, and set down with accuracy, judgment, and perspicuity. But there is nothing of this kind found among us. † Pliny has only glanc-

* For the reason of the title, see *De Augmentis Scientiarum*, Sect. IV.

† It were to be wished that more of it could be found at present: but men seem now so thoroughly persuaded, that

ed at the subject cursorily, and somewhat rudely. But perhaps a tolerable history of the celestial bodies might, with the assistance of the modern observations, be drawn from the works of Ptolemy, Copernicus, and other learned astronomers; only such a history would entirely want the light of experiments. *

It may, perhaps, seem strange, that we should here bring the systems that have been raised, improved, and enlarged with so much labour, back to their original, artless forms, and simple observations: But we have a much greater work in view; though without any intention of losing the least of former discoveries. "For we here propose, not only the business of astronomical calculations, and sure astrological predictions; but a genuine philosophy, for informing the understanding; not only a discovery of the motions and revolutions of the celestial bodies, but also their substance, influence, powers, and qualities of all kinds: And this according to the natural and sound reasons of things them-

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they have a true astronomical system, on a mathematical foundation, as scarce to admit of its being called in question. However, it may not be amiss for posterity to receive our doubts as well as our doctrines.

* Which are what must shew the true causes of things, in the system and frame of the universe.

selves; without levity, credulity, or any superstitious regard to traditions: Intending such a philosophy as shall not invent solutions, plausibly adapted to the phenomena; but shew what is the real fact, or truth, in nature.*

It is easy to perceive, that both they who assert the rotation, and they who assert the stability of the earth, plead and produce phenomena on both sides, with almost equal uncertainty. But the author of the new astronomical system of our time,† who makes the sun the centre of the secondary movement; and the earth the centre of the primary; as if the planets performed their revolutions round the sun (which some of the ancients suspected of Mercury and Venus) would have excellently solved the difficulty, had he verified and confirmed the supposition.‡ And we make no question but other constructions and theories of like kind, may be invented by men of a sharp and subtile genius; but the persons who offer us such theories, are

* Doubtless this is a just and worthy end of the enquiry: But what true steps have been taken towards this end; and how far we are at present from it, may deserve consideration.

† Viz. Tycho Brahe.

‡ Was not this supposition thought to be well verified, and confirmed, to many in its time?

not greatly concerned, whether they be perfectly true; and only suppose them for the convenience of calculation, and the forming of astronomical tables,* Our design, therefore, differs greatly from theirs; as tending not to the discovery of theories, and real solutions, which may be various and numerous: but the truth of things, which is simple and one: And to this discovery of truth, the way is opened by a genuine and pure history of phenomena; but blocked up by one that is perverted and infected with opinions.

We must, however, openly profess, that our hope of discovering the truth, with regard to the celestial bodies, depends not solely upon such a history, raised after our own manner; but much more upon the observation of the common properties, or the passions and appetites of the matter of both globes. For as to the separation that is supposed betwixt the ætherial and sublunary bodies, it seems to us no more than a fiction, and a degree of superstition, mixed with rashness: For it is certain, that numerous ef-

* This seems rather a candid construction of the author, than the intention of the theorists; who generally desire the world should take their solutions for true discoveries. See hereafter, Sect. I.

fects, as expansion, contraction, impression, yielding, collection, attraction, repulsion, assimilation, union, and the like, have place, not only here upon the surface, but also in the bowels of the earth, and regions of the heavens. * And no more faithful guide can be used or consulted, than these properties of matter, to conduct the understanding to the depths of the earth, which are absolutely not seen at all, and to the sublime regions of the heavens, which are generally seen, but falsely; on account of their great distance, the refraction of the air, the imperfection of glasses, &c. The ancients, therefore, excellently represented Proteus as capable of various shapes, and a most extraordinary prophet, who knew all things, both the past, the future, and the secrets of the present: For he who knows the universal properties of matter, and by that means understands what may be, cannot but know what has been, is, and shall be the general

* On this seems founded Sir Isaac Newton's third *Regula Philosophandi*; viz. "That those qualities of bodies which are incapable of augmentation and diminution, and hold true in all the bodies whereon experiments may be made, ought to pass for general qualities, residing in all bodies indifferently." See his *Principia*, Lib. III. in init. See also hereafter, Sect. I.

state and issue of things.* Our chiefest hope and dependance in the consideration of the celestial bodies, is therefore placed in physical reasons; though not such as are commonly so called; but those laws, with regard to the appetites of matters, which no diversity of place or region can abolish, break through, disturb, or alter.†

We would not, however, on this account, have mens diligence at all slackened, in observing and recording the phenomena of the celestial bodies; for when a larger stock of these shall be procured, every thing afterwards will be the readier and better established. And here we cannot but congratulate mankind upon the care, industry, and alacrity of certain artificers, and men of letters; who have lately attempted a new intercourse or traffick with the celestial bodies, by the means of telescopes, and optical instruments; as it were, by so many boats and ships in the way of navigation.‡ This is an at-

* See an attempt towards enumerating these universal properties of matter in the *Sylva Sylvarum*; under the article CHARACTERS of matter.

† Such as resistance, gravity, impenetrability, &c.

‡ How far telescopes and other optical instruments are improvable to the purposes of astronomy, has not, perhaps, been hitherto fully considered, especially Sir Isaac Newton's

tempt, which we judge extremely noble, and worthy of mankind; both in its beginning and end: the rather, because the observers are no less commendable for their fidelity, than their enterprize; as having ingenuously and clearly laid down how each particular appeared to themselves. All that remains, therefore, is only for them to persevere with great severity of judgment, and change of instruments; increasing the number of the evidence, or eye-witnesses; and to try each particular over and over again, in different manners; and lastly to raise objections to themselves, and open and explain to others, all the objections that may be brought on the contrary side of the question, without despising even the slightest scruple: lest it should happen to them, as it did to Democritus, in the case of the figs, which had a honey-taste; wherein the old woman proved wiser than the philosopher: For a mighty slender and ridiculous error may be the cause of great and wonderful speculations.*

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reflecting telescope, with regard to the metal and the structure.

* Let it, therefore, be freely questioned even at this day, whether the earth has a diurnal and annual rotation? Whether all the stars are solid bodies? Whether a comet may occasion a deluge? Whether we have a just theory o

In order to lay the foundation for a pure and genuine history of the celestial bodies, we will 1. propose certain capital philosophical queries; annexing thereto such uses, as may probably be drawn from a consideration of the celestial phenomena: And this to shew the scope of such a history as we propose; that they who would assist in its compilement, may perceive its tendency, and all along bear in mind the questions; whereby they may be directed to procure such a history as shall serve to determine these questions; and afford others the like fruits and uses for the service of mankind. The questions we mean are such, as, according to the proper office of history, enquire into the facts of nature; and not into their causes. 2. In the next place, we shall distinctly shew wherein the History of the Heavens consists; what are its parts; what things are to be learned, or carefully sought after; what experiments to be made, and procured; and what observations to be used and considered: Thus laying down, as it were, certain heads of induction, or articles of enquiry, con-

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the moon? Whether the cause of the tides is justly assigned? &c. And this, if it were only to procure more rigid and perfect demonstrations: For these things are not, perhaps, so perfectly settled, as necessarily to exclude all modest, and scientifical doubting,

cerning the celestial bodies.* 3. Lastly, we shall give directions, how the things sought for should be considered, when obtained; how they are to be exhibited; and how recorded: Lest, otherwise, the diligence used in the first enquiry, should come to nothing, or, what is worse, the succeeding structure be built upon a weak and treacherous foundation. †

SECT. I.

PHILOSOPHICAL QUESTIONS ABOUT THE SYSTEM OF THE WORLD, TO BE CLEARED UP IN THE PARTICULAR HISTORY OF THE HEAVENS.

MANY will here suppose me raising the ashes of questions long since buryed, to join them with others of later date: But as the philosophy we at present enjoy, about the heavens, has no

* After the same manner, perhaps, as the author's particular enquiries into winds, life and death, &c. are conducted.

† Here are three parts proposed, but only the first is prosecuted, and that imperfectly, as mentioned in the preface. It is pity the other two were not finished: For, though astronomy has been strenuously cultivated since the author's time; yet the manner of treatment, here laid down, has not been sufficiently observed.

stability in it; as it is our fixed resolution to submit every thing to our new test of examination, and genuine induction; * and as, perhaps, if any questions were left untouched, so much the less pains and diligence would be employed in the history, because it might seem needless to enquire into things, whereof no question has been started; we find it necessary to take in all the questions, which the nature of the thing holds out to us. Besides, we are the more willing to admit of questions here; as being less certain of their decision, by our method; and not seeing clearly into the issue. †

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* As laid down in the *Novum Organum*.

† The author here appears to intimate some distrust of the method of his *Novum Organum*, in deducing the strict philosophical history of the heavens; I suppose on account of the difficulty, or apparent impossibility of making the proper experiments upon the celestial bodies, and procuring crucial instances. And, perhaps, more caution is here required, than some of the modern mathematical, and mechanical philosophers have used: For what certainty is there, that, because all bodies gravitate here on earth, therefore the stars and sun must gravitate, after the same manner, in the heavens; before it is proved, that the stars and sun are more than flame? It is true, there are other ways of coming at the discovery, as Sir Isaac Newton has shewn: But this particular induction seems of itself too hastily made; and may deserve more intermediates, if procurable, to render it

Let the first question be this, "Is there any system?" or, "Is the universe spherical in its whole, and having its proper centre; or do the particular globes of the earth and stars, lie scattered, and adhering each to its own seat; without any system, or common centre?"

The schools of Democritus and Epicurus boasted, that "Their founders had broke down the walls of the world;" but this was no exact consequence of their doctrine. For as Democritus held matter, or an infinite quantity of seeds, finite in properties and powers, to be in a perpetual agitation; and by no means fixed from eternity; he was obliged, by the force of this tenet, to maintain worlds of various figures, subject to rise and destruction; some of them better, and some of them worse regulated, and put together; and also rough draughts and imperfect essays of worlds. But admitting all this, the portion of matter, destined to form the world within our sight, might have a spherical figure: since all his worlds must necessarily be of some

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perfectly safe and conclusive. See Sir Isaac Newton's third *Regula Philosophandi*, as illustrated at the beginning of the third Book of his *Principia*. See also above, Sect. IV. and compare the whole with the second part of the *Novum Organum*.

figure. For though there can be no middle in infinity, yet a round figure may subsist in the parts of infinity, as well in a world as in a ball.

The opinion which destroys the existence of a system, is that of Heraclides, Ecphantus, Nicetas, Philolaus, Gilbert, and all those, except Copernicus, who make the earth a moving planet. For, according to this opinion, the planets, and all the numberless fixed stars, both visible and invisible, have each its own sphere and primary form, through the vast expanse of the heavens, where they are sprinkled like islands in the ocean, and revolve not about a common centre, but each in its own orbit; some simply, and others with a small progressive motion of their centres. What appears most exceptionable in this opinion, is, that it takes away rest or immobility from nature: For it should seem, that as there are revolving bodies in the universe, that is, bodies carried with an infinite, and perpetual motion; so, on the contrary, there should be some body at rest; a middle nature * betwixt the two, being that of bodies in rectilinear motion.

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* The later discoveries, so far as they go, seem rather to shew that there is no such thing as absolute rest in nature; unless we allow the fixed stars to be at rest: But whether the whole visible system of things be at relative rest, or in

But this question, Whether there be a system or not, may receive a determination from a decision of these points; viz. 1. Whether the earth move, or stand still. * 2. Whether the substance of the fixed stars be of a solid or flamy nature. † And, 3. Whether the interstellar spaces be corporeal, or empty of matter. ‡ For, 1. If the earth stands still, and the heavens revolve, with a diurnal motion, then doubtless, there is a system. ‖ But if the earth revolve, it is not thence perfectly shewn, that

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uniform rectilinear motion, through an infinite *expansum*, seems not satisfactorily determined. See Sir Isaac Newton's *Principia*, Lib. III. Prop. XI, XIV, &c.

* Strong arguments are produced by the moderns, both for the diurnal and annual motion of the earth; but perhaps they still require to be verified. Thus the rising of the equatorial parts, and the sinking of the polar, if well confirmed by experience, may prove a crucial instance for the diurnal motion; as the exact determination of the parallax of the fixed stars, may, perhaps a demonstration of the annual. See the attempt of Dr. Hook, to prove the motion of the earth by observations: Which has also been attempted since by others, but without success. See Sir Isaac Newton's *Principia*, Lib. III, Prop. XX.

† This point still seems to remain conjectural.

‡ They appear, by Sir Isaac Newton's experiments and calculations, neither an absolute vacuum, nor considerably charged with matter. See the *Principia*, Lib. III. Prop. VI.

‖ And has the earth, or the centre thereof, for its centre.

there is no system; because there may be another centre of the system, suppose the sun.* 2. If only the globe of the earth be a dense and solid body, the matter of the universe may seem to come together, and be condensed at the centre.† But if the moon, or other of the planets, be found to consist of a dense and solid matter; then dense bodies should seem not to collect to any centre; unless dispersedly, and, as it were, fortuitously. 3. Lastly, if the interstellar spaces be a vacuum, then each sphere will have first finer effluvia, and afterwards a vacuum about it; but if those spaces are filled with matter, then there will seem to be a collection of the denser bodies in the middle;‡ whilst the rarer are thrown to the surface.‖

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* Which comes nearly up to the case lately discovered by Sir Isaac Newton.

† See Sir Isaac Newton's *Principia,* Lib. III. Prop. XX p. 386.

‡ See again the *Principia,* Prop. XX, &c.

‖ The present discoveries in astronomy scarce reach beyond that commonly called the Solar System; including the earth, moon, planets, and comets: Which appear to make a system, in the sense of the author; unless we require the utmost precision; the common centre of gravity of the earth, sun, and all the planets and comets, being its centre, and not differing much from the centre of the sun. See Sir Isaac Newton's *Principia,* Lib. III. Prop. XII. Corol. and Prop. XIV.

It is of great use in the sciences to understand the coupling of questions; because some of them contain history, or matter of induction, for decisions; and some of them do not.

Supposing a system; the next question will be, What is the centre of the system?

For if any one of the globes must be in the place of a centre, there are two principal ones which bid fair for this purpore; viz. the earth and sun. The human sight and inveterate opinion are on the side of the earth in this question: But the greatest reason here is, that as all dense bodies come into a little space, but rare ones diffuse themselves wider; it should seem to follow, that matter must contract itself about the middle part of the world, as the area of a circle contracts itself to its centre: This being, as it were, the proper and only seat of dense bodies.

On the other side; it makes for the sun, that the thing which has the greatest efficacy in the system, should have the chiefest place assigned it; so as to act commodiously, and diffuse itself through the whole: But as the sun appears to vivify, and animates the world, by imparting its heat and light thereto; it should seem very justly and regularly placed in the middle of the world.

Another argument on the same side is, that

the sun manifestly has its attendants or satellites; viz. Venus and Mercury, and, according to the opinion of Tycho, all the other planets; whence the sun really seems to be the centre, or, in some respects, to perform the office thereof: and thus, consequently, comes the nearer to being the centre of the whole; according to the opinion of Copernicus. *

But there are many and great inconveniencies found in the Copernican system: For 1. It must be accounted a great one to load the earth with three different motions. 2. It likewise seems unwarrantable to separate the sun from the choir of the planets; wherewith it has so many properties in common. 3. To introduce so much immobility into nature, by supposing the sun and fixed stars immoveable; whilst they are, of all others, the most lucid and shining bodies. 4. To make the moon adhere to the earth, as it were in an epicycle; with other particulars of like kind; which seem feigned, or only supposed in nature, merely for the sake of calculation. †

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* This has a great agreement with the inductive enquiry of Sir Isaac Newton upon the same subject. See Princip. Lib. III. Prop. XII. and XIII.

† It may deserve a particular regard, that mathematicians, when they apply to astronomy, or other branches of

But if the motion of the earth be allowed; it seems juster, that there should be no system at all; or that the celestial globes are sprinkled indifferently up and down the heavens, rather than that there should be a system with the sun for its centre.* And this opinion was chiefly received and approved by antiquity, and former ages: For the opinion of the earth's motion is no new one, but borrowed from the ancients; †

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physics, are apt to put off neat solutions of phenomena for demonstrations; especially if such solutions afford easier and exacter methods of calculation, so as to make "All come right," as they phrase it. Thus, perhaps, the stress of the arguments at present in use, for proving the truth of the Copernican System, lies chiefly in the concinity, and precision, which that system affords in calculation, and the full solution of all the phenomena of the celestial bodies: Whilst, at the same time, that system may possibly be false; though these calculations prove exact, and the solutions adequate. This treacherous faculty of the mind should be carefully watched. See the *Novum Organum*, Part I.

* It is not to be expected, that this argument should have any weight, at present. See Sir Isaac Newton's Princip. Lib. III.

† Nicetas, of Syracuse, is said to be the first who discovered the diurnal motion of the earth; and Philolaus the first that discovered its annual motion about the sun. See *Ciceron. Quest. Tuscul.* Lib. II. *ad finem*, and *Plutarch.* Lib. III. *De Pacit. Philosoph.* Cap. 11. & 13. See also, *Laert.* Lib, VIII. Cap, 85, and *Archimed. Arenar. in init.*

though it be quite new to make the sun the centre of the world, and immoveable: And of this Copernicus is the original author.

The next question concerns the dimensions of the system; though not so as to take any perfect measure thereof; but only to ascertain, Whether the starry heavens be like one continued region, orb, or sphere; or whether the fixed stars are some of them immensely higher than others? For it is impossible they should be exactly all of the same height: As the stars are, doubtless, situate, not like spots upon a plane, that have only a dimension in surface; but as entire, large and deep globes. And as they are formed of such different magnitudes, some of them must necessarily bulge out either upwards or downwards, more than others; and then one surface cannot possibly take them all in, either on their upper or lower parts. And if this be the case in the parts of the fixed stars, it would be rash to assert, that the stars, in their entire body, are not some of them higher than others. But allowing this; yet there may be supposed a certain definite, though considerable, thickness of the region called the sphere of the fixed stars; which may, in some measure, terminate those prominences and degrees of height: For we see in the apogees and perigees of the pla-

nets; each of their orbits has a remarkable depth, wherein they ascend and descend.* But the meaning of the question is only, Whether some fixed stars are higher than others; and, as it were, in different orbs, like the planets?

And this question also has a relation to that other of the motion or rest of the earth: For if the stars have a diurnal rotation, round the earth; and all of them move with an equal velocity; and as the planets, according to their situation higher or lower, differ in velocity and slowness of motion; it seems probable, that the fixed stars, being equal in the velocity of their motion, are also placed in one and the same region of æther; the depth whereof being supposed very considerable, may, yet, not be so great as to cause a difference in their velocity: But all things may seem to move together through that whole region, as if linked and bound to one another by a natural sympathy: Or, at least, the difference may be too small to become visible to us, by reason of the distance.

But if the earth move, the stars may either stand still, according to the opinion of Copernicus; or what seems much more probable, they

* Viz. the obliquity of the planets orbits.

may, as Gilbert first advanced, each of them have a rotation about its own axis, in its own place, without any motion of their centres; in the same manner as the earth itself, if its diurnal motion were freed from those two additional ones assigned by Copernicus.* But whichever be the case, the fixed stars may be some of them higher than others; so long as they escape our sight.†

The fourth question may be concerning the connexion of the system. This question admits of three cases; viz. 1. vacuity; 2. contiguity; and 3. continuity. Let it, therefore, first be enquired, whether the interstellar spaces are empty of matter. Gilbert, is express in the af-

* This approaches nearest to the modern opinion, which supposes the fixed stars to be every one of them a sun, and the centre of a system like the solar. This indeed requires an immense quantity of Space; but space is said, in its nature, to be infinite. Such kind of excursions are highly pleasing; and gratify the mind, which delights in ranging at large, through infinite regions; but should not sober philosophy here use the rein? See Sir Isaac Newton's *Princip.* Lib. III. *Schol. General.* in init.

† There are several curious observations, and sublime speculations, relating to this question, in the Philosophical Transactions. See particularly N° 364. page 22. See also, Sir Isaac Newton's *Princip.* Lib. III. Prop. XIV, &c. and the Queries at the end of his Optics.

firmative; and so seem to be some of the ancients, who conceived, that the stars were diffused without any system; but especially such of them as asserted compactness of body in the stars. The whole of the opinion is, 1. that both the stars and earth consist of a dense and solid matter; 2. that they are immediately surrounded with a certain kind of bodies, somewhat of the same nature with the globes themselves, respectively; though more imperfect, languid, and attenuated; being no other than the effluvia and exhalations of the globes themselves, such as are vapours, and the air, with respect to the earth; 3. that these effluvia did not reach to any great distance, around each globe; and 4. that all the other immense intermediate spaces were void of matter.

This opinion seems countenanced from hence, that the bodies of the fixed stars are visible to an immense distance: For if that entire space, through which we see them, were filled, especially with such bodies as must needs be very unequal in point of rarity and density, the rays of light would be so refracted, as never to arrive at our eyes: Whereas, if much the greatest part of that space be empty; the light, it is probable, will come the easier to us. However, the determination of this question will, in good mea-

sure, depend upon what we shall soon propose about the substance of the stars: * For if their substance be solid; it should seem, that nature has busied herself with little more than the globes themselves, and their atmospheres; and left the intermediate spaces desolate, and forsaken: Whence it might appear probable, that all the globes are denser about their centres, and rarer towards their surfaces; † so that their atmospheres, at length, ceasing, they terminate in vacuity. ‡

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* See Sect. II.

† Is not this the case in the earth, and all the planets and comets? See Newton. *Princip*, Lib. III. Prop. XX, &c.

‡ Sir Isaac Newton has prosecuted this enquiry by a variety of accurate experiments, made with pendulums, and falling bodies, in different mediums. The result whereof, so far as relates to the present purpose, is, 1. that the resistances of equal globular bodies, moving with equal velocity, in air, water, and quicksilver, are as the densities of the fluids; 2. that though the water, air, or quicksilver, were rarified by an infinite subdivision of their parts, so as to become mediums infinitely fluid; they would still resist, after the same manner as before: Because this resistance proceeds from the inactivity of matter; which is essential to bodies, and constantly proportioned to their quantity of matter. For, though to divide the parts of a fluid, may lessen that resistance which proceeds from the friction and tenacity of the parts; yet the quantity of matter is not diminished by such division: And whilst the quantity of matter remains the same, so will its inactivity, to which the resist-

On the contrary; if the fixed stars be of a rarified and flaming substance,* it will appear, that the nature of rarity is not only a decrease of density, but, of itself, a powerful and primary thing; no less than the nature of solidity: And that it takes place both in the air, the æther, and the stars themselves, so as to leave no necessity for a vacuum.

The present question also concerning a vacuum in the interstellar spaces, has a dependance upon that other belonging to the principles of natural philosophy; viz. whether there be any vacuum? But this question must be put with some distinction: For it is one thing to deny a simple, and another to deny a collective vacuity; since the reasons producible for the existence of an interspersed vacuity (admitting the relaxation or rarification of bodies) are stronger

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ance here understood, is ever proportional. 3. That, therefore, to diminish this resistance, the quantity of matter must be diminished in the spaces through which the bodies move: Consequently, the interstellar regions, through which the globes of the planets and comets constantly revolve in all directions, with great freedom, are not filled with any corporeal fluid; excepting only for some highly rarified vapours, and the rays of light transmitted through those regions. See *Princip.* Lib. II. *Schol. Gen.* and Lib. III. Prop. XL. &c.

* See hereafter, Sect. II.

than those which make for a collective vacuum, in the vaster spaces. And this distinction was not only perceived by Hero, a subtile mechanical philosopher; but also by Leucippus and Democritus, the introducers of a vacuum, which Aristotle combats with certain subtilties and turns of wit. But the two above-mentioned acute and famous philosophers allow an interspersed vacuity; so as to destroy the notion of a collective one: For, in the opinion of Democritus, vacuity is so circumscribed, that bodies cannot be drawn asunder, any more than they can be compelled together, beyond certain bounds. And though this is no where expressly asserted in those writings we have remaining of Democritus; * yet he seems to say as much, by making bodies infinite, as well as space: Which he does for this reason, that bodies otherwise, would never hold together; viz. if space were infinite, and bodies finite: And, therefore, if matter be equally infinite with space, vacuity is necessarily bound up within certain limits: † Which seems to be his true opinion, fairly ex-

* See *Morhof. Polyhist.* Tom. II. Lib. II. Cap. VII. p. 179, &c.

† This is attempting to account for cohesion in bodies; which put into a vacuum, should fall to pieces, if the position were true.

plained; so as to set certain boundaries to the expansion of bodies, by the vacuity wherewith they are coupled; without allowing any pure or simple vacuity, uncontained in matter.*

But if there be no vacuum, after the manner of a solution of continuity; yet so great a diversity in the parts and regions of the system of bodies, that they seem to be, as it were, of different nations, and countries; there hence arises a second question, with regard to the connexion of the system; viz. whether pure æther be one uniform or continued fluid; or whether it consists of many contiguous parts? By a contigu-

* Sir Isaac Newton proves, that all spaces are not equally filled; because, otherwise, the specific gravity of the fluid that possesses the region of the air would be equal to that of quicksilver, gold, or any other the densest bodies; which, therefore, could not descend in air: For no bodies can descend in such fluids as are not specifically lighter than the bodies. See *Princip.* Lib. III. Prop. VI. And, as the same philosopher shews, there is no absolute vacuity in the interstellar regions, on account of some subtile and highly rarified vapour, the rays of light, and some small resistance, which the several celestial bodies sustain in their motions, his doctrine on this head seems somewhat agreeable to that of Democritus, as here explained; especially if a subtile elastic fluid, or spirit, be supposed the cause of gravity, or cohesion, in bodies. See *Princip*, Lib. III. *Schol. Gen*, ad finem See also the Queries at the end of the same author's optics.

ous body we here mean a body that lies upon another, without mixing with it. Nor do we understand such a hard flooring as the common astronomers have feigned; but such an one as may admit of flowing; as when water floats on quicksilver, oil on water, and air on oil. For no doubt, but in that immense tract of æther, there are very considerable differences in point of rarity and density: besides many others: * But this may be the case, whether the parts of the æther are continuous or contiguous. For it is manifest, that even in the sea itself, the water on the top is not of the same taste and consistence with that at the bottom. † And in the atmosphere, there is a great difference betwixt the air adjacent to the earth, and that high above it; and yet there is one entire and constant flow in the atmosphere. ‡ The question therefore comes

* Perhaps the finer parts of the atmospheres of the planets and comets may go off into the region of æther, if there be any such fluid, as they pass along it; and thus, by degrees, impregnate that immense ocean, and render it a kind of compound tincture, as the earth's atmosphere more manifestly is. See Sir Isaac Newton's Conjecture as to the use of the comets; *Princip.* Lib. III. Prop. XLI. page 472, 473. Mr. Boyle's Memoirs for a General History of the Air. Dr. Hook's Micrographia. &c.

† See Mr. Boyle on the Saltness of the Sea, &c.

‡ See Mr. Boyle's Memoirs for a General History of the Air.

to this: viz. Whether the differences in the tract of æther insinuate themselves gradually, and by a continued flux; or whether they are constituted, and distributed, at certain considerable distances, or limits, where bodies meet, that will not mix; as here below the air floats on water.* And to take the thing simply, that whole, pure, and limpid body, wherein the globes of the earth and planets float as in an immense ocean, which in its dimension, and the space it possesses, almost infinitely exceeds the dimensions of those globes, seems to be one undivided and perfectly united thing.†

But whoever carefully observes nature, will find her method is to proceed by degrees, for certain spaces; and then, of a sudden, to advance by starts; and to use this procedure alternately: Otherwise, to consider it closely, there could be no fabric of things; no organical conformation, if she constantly proceeded by insensible degrees. This gradual procedure, therefore, may take place in the intermundane spaces, and not in the world itself; the structure where-

* See the piece last cited.

† Upon what experimental foundation does this notion of æther stand; as of an actual fluid existing in the interstellar regions.

of requires very different things to be separated, or shut up, from, and yet approach one another. Hence, the air immediately touches, and succeeds to, very different bodies from itself; viz. the earth and water; without going in a scale, first from earth to mud, and then from mud to water, from water to vapour, or clouds, and, lastly, to air; but nature here jumps at once to air, without any intermediate degree. *

But the most observable and fundamental division of all, in the air and æther, seems derivable from the nature, which is more or less susceptible of a stellar nature. Whence there seem to be three very remarkable kinds of regions between the globe of the earth, and the utmost extent of the heavens; viz. 1. the tract of air; 2. the tract of the planetary heaven: † and 3. the tract of the starry heavens. Now the stellar nature does not exist in the lower tract; but in the middle one it begins; and there comes together into a few particular globes; and in the upper diffuses itself into a very large number of globes; so that its top may seem to reach the entire empyrean heaven.

It must, however, be remembered, according

* This appears a capital observation for interpreting the work of nature.

† Now commonly called the Solar System.

to what was just now mentioned, that nature here uses this gradual and starting procedure by turns, so as to make the confines of the first region communicate with the second; and those of the second with the third; For in the higher air, after it begins to be purged of the earth's effluvia; and to be more rarified by the effluvia of the celestial bodies; it tries and endeavours to become flame; as in the case of the lower comets, * which seem of a middle nature; between the consistent one of the stars, and a more perishable one. Again, the heavens about the sun may seem to grow starry, and begin to pass into the nature of the stellate heaven: For the spots which have been accurately observed in the sun, may possibly be certain rudiments of a starry matter. † But, in the heavens, about Jupiter, the stars appear in their perfection: though, by reason of their smallness or distance, they are invisible to us, without the assistance

* All the comets are shewn by Sir Isaac Newton to be higher in the system than the moon; and to revolve in long ellipses about the sun. See *Princip*, Lib. III. Prop. XLI.

† See the several observations upon these spots of the sun in the Philosophical Transactions, French Memoirs, &c. or a Summary of the whole in Wolf. Element. Astronom. pag. 459, 460, &c.

of telescopes.* And again, at the greatest height of the starry heaven, the stellar nature seems to be more continued, and diffused; from those numberless twinklings or radiations of the æther, among the fixed stars that are numbered. †

There is a fifth kind of question regarding the situation of the parts of the system, or the order of the heavens. And whether there be a system, with the sun for its centre, or no system at all, so as to leave the celestial bodies loose and straggling or whether astronomers shall hereafter discover any new system; the enquiry will still remain, what planet is nearest to, or farthest from, another; and, in like manner, what planet has a greater, and what a less elongation from the earth or sun.

If the system of the ancients be admitted, there appears no reason for insisting strenuously upon the new enquiry, about the four superior regions; viz. that of the fixed stars, and those of Saturn, Jupiter, and Mars: As their

* Are any fixed stars certainly found so low in the system as Jupiter?

† These twinklings are thought, by Sir Isaac Newton, to proceed from the refraction of our eyes, and the tremulous motion of the air. See *Princip.* Lib. III. page 467. See also hereafter, Sect. II.

order and position have been agreed to by all ages, without contradiction from any phenomenon. Their respective motions are also settled, and cause no error in calculation. * But the ancients, even upon their own system, had doubts about the sun, Venus, Mercury, and the moon; and the moderns likewise have questioned, which was the higher planet, Venus or Mercury. That Venus should be the higher is argued, because she moves somewhat slower; and that Mercury should be the higher, because he seems more tied to the sun; whence it is conceived, he must be placed the nearest to him. But for the moon, she was always placed nearest the earth; though there is some dispute about her approach to the sun. †

There is also another kind of question regarding the constitution of the system: For example, whether one planet moves sometimes over and sometimes under another, by turns: Which seems demonstrated in the case of Venus, from

* But these particulars are settled to greater exactness by later observations. See Sir Isaac Newton, Dr. Gregory, Walfius, &c.

† See these particulars adjusted in Sir Isaac Newton's *Principia*, Part III. *De Systemate Mundi*, and from thence by the later writers of astronomy; but particularly Wolfius in his *Elementa Astronomiæ*.

diligent observations; whereby she has been found sometimes above, and sometimes below the sun. And it is proper to enquire whether the apogeè of a lower planet may not reach the perigée of a higher; and thus produce an interfection of orbits.*

The last question, as to the situation of the parts of the system is this, Are there several different centres in the system; and separate revolutions round them? Especially, since not only the earth has been made the centre of the first movement; and the sun the centre of the second; but also Jupiter is made the centre of those lesser planets, or satellites, lately discovered by Galilæo. †

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* How the motions of the planets are performed round the sun, without clashing or interfering with each other, see exhibited in a single theorem, by Wolfius, in his *Elementa Astronomia*, page 505, and 506.

† And which Sir Isaac Newton demonstrates, revolve about the centre of Jupiter, with a force reciprocally as the squares of their distances from it. See *Princip*. Lib. III. Prop. I. And the best solutions of all the preceding questions seem derivable from the same admirable work; but those who have not a sufficient stock of mathematics to understand that piece, may to good advantage consult Christ. Wolfii. *Elementa Astronomia*: where all is explained in a much more familiar and entertaining; yet geometrical manner.

And thus there are five capital questions which should be sifted with regard to the system itself; viz. 1. Whether there be a system? 2. What is its centre? 3. What its dimensions? 4. What its connexion? and, 5. What its order of parts? But for the external parts of the heavens, and the empyrean heaven, we raise no questions about them: For of these things there is no history nor phenomena extant; and therefore, what is to be known of them, must be had by consecution, not by induction.* This enquiry, therefore, must wait its proper time; and expect its suitable method. But for the immaterial heavens, we had better trust them wholly to religion: For what the Platonists of old, and Patricius of late (to shew themselves divines in philosophy) have said on this head, is mixed

* What kind of intimation is this? The method of enquiring by induction is known, and fully explained in the author's *Novum Organum*: But what is the method of discovery by consecution? Perhaps, it is meant, that when the business of inductive enquiry shall be carried its due length, in astronomy; and the immense regions of the fixed stars be as well understood as the Solar System, at present; the notion of an empyrean heaven may, by consecution, appear, to future generations, a vanity, or a fiction; or else all that supposed region be found full of worlds and systems, like the solar. But this may be launching too far.

with manifest superstition, arrogance, and phrensy, and, like the Icons and Æons, or dreams and fictions of Valentinus, bold and fruitless; so that we reject it all, as trifling, vain, and preposterous: For to canonize folly, as in the apotheosis of Claudius into a mushroom-god, is intolerable: And to venerate its vanities is extreme abomination; and the bane of the understanding.

SECT. II.

PHYSICAL QUESTIONS CONCERNING THE SUBSTANCE OF THE CELESTIAL BODIES.

WE come next to the questions regarding the substance of the heavenly bodies; into which, and the causes of their motions, it is the principal office of philosophy, to enquire. But astronomy also undertakes to enquire into their motions, with the properties thereof; and both philosophy and astronomy into their influence and powers. There is, however, a difference to be made betwixt astronomy and philosophy: Astronomy should be conceived to lay down such hypotheses as best serve the purposes of a ready and expeditious calculation; but philosophy such as nearly approach the truth and reality

of nature. Again, the hypotheses of astronomy may be subservient to their own convenience, but should in no wise prejudice the truth of things; and the determinations of philosophy should here be perfectly explicable upon the phenomena of astronomy. But, at present, the direct contrary is the case; for the fictions of astronomy are introduced into, and have corrupted philosophy; and the speculations of philosophers about the celestial bodies please none but themselves; and in a manner run off from astronomy; as regarding only the heavens in general, without at all reaching to the particular phenomena and their causes. Therefore, as both these sciences, in their present state, are but light and tottering things; there foundations should, by all means, be stronger fixed; and in such a manner, as if the two, which, by reason of the school uses made of them, and the narrowness of mens comprehensions, have, for so many ages, been separated and disjoined, were but one and the same thing, to be wrought up together into a single corps of science, under the title of "Philosophical Astronomy." *

Let the first question, therefore, be this, Is

* Which the present age has seen successfully promoted by Sir Isaac Newton.

the substance of the celestial bodies of a different nature from that of the terrestrial? For the rash and disputatious temper of Aristotle, has given us an imaginary heaven, made of the quinta essentia, that is not subject to alteration, or even to heat. But to drop, for the present, speaking of the four elements, which this quinta essentia supposes; it was certainly a very confident attempt, entirely to cut off all relation betwixt the elementary and celestial bodies; whilst two of the elements, viz. air and fire, have so great an agreement with æther, and the stars: But it was the practice of that philosopher to abuse his own genius, make himself work, and affect obscurities. There is, however, no doubt, that the regions both below and above the moon, together with the bodies they contain, differ from one another in many and great respects: But it is no less certain, that the bodies of both these regions, have numerous properties, tendencies, and motions, in common; so that we should rather distinguish betwixt, than rend them asunder; as being, at the bottom, of the same nature. *

* Is this position capable of a strict inductive proof? Or can any nearer advances be made to the discovery, than by Sir Isaac Newton's third *Regula Philosophandi?* See above, Sect. 1.

As to that opinion of their heterogeniety, which makes the celestial bodies eternal, and the terrestrial perishable; it seems fallacious on both sides: For the heavens have not that constancy, nor the earth that mutability which is coined by the favourers of this notion. Whoever would form a true judgment of the earth, can only do it from such parts thereof as have been seen; but all the terrestrial bodies hitherto observed by men, have scarcely been dug, or thrown up, from a greater depth than that of three miles from the surface; which is nothing in comparison of the earth's semidiameter, and the whole contents of the globe: And therefore the internal parts of the earth may, for any thing that has hitherto appeared, be as durable as the heavens. *

And if the earth did suffer changes at greater depths; the consequences thereof must necessarily produce greater accidents, than appear on the surface: But in all the changes we perceive towards the superficial parts, there is almost constantly some other manifest cause of them derivable from above; as difference of the seasons, rains, droughts, heats, &c. so that the earth of itself, and its own proper force, seems to afford

* See Mr. Boyle, of the Subterraneal Regions.

no cause of any considerable change. And allowing, what is probable, that not only the celestial bodies, but also the earth, acts upon the regions of the air; either by breathing out cold, dircharging winds, or the like; yet all this variety may happen in those regions of the earth which lie near the surface; and where no one can doubt but there are numerous changes and revolutions.

But of all the phenomena of the earth; earthquakes, and accidents of the like kind, must be allowed to penetrate by far the deepest; as the eruption of water, the eructation of fire and flames, chasms, and falling in of the earth, &c. and yet these do not happen at any great depth; as most of them usually affect but some little space on the surface of the earth, without spreading far: For the wider an earthquake, or the like, should spread upon the earth's surface, the deeper its origin must he conceived, and vice versa. *

It is true, there sometimes happens such earthquakes, as shake very large and spacious coun-

* This, though probable, may require to be better confirmed, because the force that was great at first, and exerted on the central parts, might be suspected to diminish near the surface; so as not there to produce any very considerable effect.

tries; though these are not frequent; but extraordinary cases; and may therefore be, pertinently, compared to the comets, which also appear but seldom: For the business here is not to maintain the immutability of the earth; but only to shew there is no great difference betwixt the heavens and the earth in point of constancy and change.

And further: that the internal parts of the earth are not more subject to corruption than the heavens themselves, may be argued from hence; that things usually decay and perish, where they may be recruited and renewed. For as showers and other falling meteors, which renew the face of the earth, can, by no means, penetrate to its internal parts; which, nevertheless, maintain their bulk, and quantities; it should seem to follow, that nothing is there lost; as there is nothing at hand to repair any loss. *

* This conjecture may receive some light from the converse thereof, which is intimated by Sir Isaac Newton in his *Principia*, upon better grounds, perhaps, than he there expresses; viz. that as the sea is absolutely necessary to the constitution of the earth, in order to afford a sufficient quantity of vapour, which is raised by the sun; and being either condensed into clouds, falls back again in rain, to water and supply the earth, for the production of vegetables; or

Lastly, the mutability observed in the more external parts of the earth, seems only accidental: * For the thin outside crust, which appears to reach but a few miles downwards, and to contain the two wonderful laboratories of plants and minerals, would receive little variety, much less produce such beautiful and elaborate works, without feeling the influences and perpetual animation of the celestial bodies. To imagine that the heat and active powers of the sun, and other celestial bodies, may strike quite through the entire body of the terrestrial globe, must be a strange degree of superstition and enthusiasm; whilst it plainly appears how small an object is sufficient to check and restrain them.

No sure argument for the immutability of the

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else being condensed upon the cold tops of mountains, runs down into springs and rivers; so, comets seem necessary for supplying the seas, and proper moisture in the planets; that what liquors are there consumed in vegetation and putrefaction, and converted into dry earth, may be seasonably recruited and made good, by the exalations and vapours of the comets. For all vegetables wholly receive their growth from liquids; and afterwards turn, by putrefaction, in great measure, to dry earth. Whence the bulk of dry earth is perpetually upon the increase, and liquids, unless otherwise supplied, perpetually upon the decrease, so as to fail at last. *Princip.* Lib. III. page 473.

* That is owing to causes from without.

heavens, can be drawn from hence; that the effects thereof are not visible: for the sight is frustrated as well by distance, excess, or defect of light, as the subtilty or minuteness of the object: So an eye placed in the moon could not discover the changes which happen here upon the the earth's surface; such as inundations, earthquakes, and the like; for these are but as atoms at so greal a distance. Nor is it safe, because the interstellar heaven appears transparent, and the fixed stars, on clear nights, appear the same, both in number and complexion, to pronounce from thence—that the entire body of the æther is clear, pure, and unchangeable: For the air receives numberless varieties of heat, cold, odours, and mixtures, of all kinds, in subtile vapours, and effluvia; and yet appears transparent. So likewise the clear face of the heavens is no proof of their purity, homogeneity, and incorruptibility. For if those huge masses of clouds, which sometimes overspread the heavens, and, by reason of their nearness to us, hide the sun and stars from our sight, were to float in the higher parts of the heavens, they would not at all sully or obscure the clearness thereof: As themselves could neither be seen, on account of their distance, nor darken the stars, on account of the smallness of their body, with regard to

the body of the stars so near them. * Even the body of the moon does not alter the face of the heavens, except on that half which receives the sun's light; so that, were it not for that light, even such a vast body as the moon would be perfectly hid from us.

On the other hand, it plainly appears from those masses of bodies, which by their bulk and size supply their want of nearness; and which, by means of their luminous matter, briskly strike the eye; that there are strange and extraordinary changes in the heavens. Thus the higher comets, seen in the form of stars, without their tails, are not only by the doctrine of the parallax, demonstrated to be above the moon, † but have also been found to preserve their own figures, stations, and constancy, for some time, like the fixed stars; without wandering in the manner of planets. And such comets have more than once appeared in our time; First in Cassiopeia, and again in Ophiucus: ‡ That this constancy of the comets should proceed from their waiting upon some certain star, which was the

* Compare this with Sir Isaac Newton's doctrine of the Tails of Comets. *Princip.* Lib. III. page 466, 467, 468, &c.

† See Newton. *Princip.* Lib. III. Lem. IV.

‡ See the author last mentioned. *Princip.* Lib. III. page 455, &c. and Wolf. *Elem. Astron.* page 594.

notion of Aristotle, has been long since exploded; with a reflection upon the procedure of that philosopher, who durst venture to raise hypotheses upon such superficial considerations, and tie the comets to single stars; and the milky way to constellations.

Nor does this alteration in the celestial regions hold only of those stars which may seem of a perishable nature; but also of those that are fixed and constant: For the ancients, in the case of the new star of Hipparchus, make mention of an appearance, but none of a disappearance: And a new star lately began to appear in the breast of Cygnus, which has now continued for the space of twelve years; a term much greater than men commonly allow to the comets: And this without any diminution or tendency to a disappearance.*

Nor is it absolutely true, that the ancient stars remain perfectly the same, and unchangeable; whilst only those of late date are subject to alteration: For, not to mention the Arcadian fables about the first appearance of the moon; there are in history, and the faithful records of things, certain examples to our purpose. The sun has three several times changed

* See Wolfii. *Elementa Astronomiæ*, page 594.

his face, for many days together; whilst the air remained clear and serene, without any eclipse, or interposition of clouds. At one of these times his light was little; and at the two others brownish. This happened in the year 790, for seventeen days together; again, in the time of Justinian, for half a year; and, after the death of Julius Cæsar, for several days successively. Virgil bears a remarkable testimony of the darkness that happened upon the death of Julius Cæsar. *

The account of Varro, a man extremely well versed in antiquity, found in St. Austin, concerning the planet Venus, might seem incredible; had not the like thing happened again in the year 1578: For Varro says, that in the time of King Ogyges, Venus changed both her colour, her magnitude, and her figure: But in our own time, there was, for a whole year together, a most remarkable alteration in the same planet; when she appeared of an unusual magnitude, and splendor; exceeded even Mars in redness; and frequently changed her figure. † And that ancient star which Aristotle declares himself to

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* "Ille etiam extincto miseratus Cæsare romam,
"Cum caput obscura nitidum ferrugine texit.

† See Wolfii. *Elementa Astronomiæ*, page 473, 474.

have seen in *Coxa caniculæ*, bearded somewhat like a comet; and vibrating its beard, especially upon a transient view; * now seems changed, and to have lost its beard: For it no where appears at present. We may add, that numerous alterations in the celestial bodies, but especially in the smaller stars, may easily be lost to us; or, through neglect, and want of curiosity, escape our observation. †

If any one should attribute these apparent changes to the interposition of vapours, and the disposition of the medium; we answer, That such changes as are constantly, equally, and for a long time together, found in the body of a star, and revolve along with it, must necessarily be either in the star itself, or in the æther adjacent thereto; and not in the lower region of the air. And it is a confirmation hereof, that such changes happen but seldom, and at long periods; whereas the changes that happen in the air, from the interposition of vapours, are frequent.

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* Compare this with Dr. Hook's Discourse of Comets, Sir Isaac Newton's *Princip.* Lib. III. page 467, and with Wolfius's doctrine of Comets. *Element Astronom.* p. 595, &c.

† For an account of such stars, see the Philosophical Transactions, and Wolfius's *Elementa Astronomiæ*, page 593, 594, 595.

Again, if any one shall judge from the order of the heavens, and the equability of their motion, that they are immutable; and take the exactness of their periods and revolutions, as a certain sign of their constancy, because such a constancy of motion may seen unsuitable to a corruptible substance; he should consider a little more attentively that these regular returns and fixed periods are also found in some things upon the earth, particularly in the ebbing and flowing of the sea. And that the smaller differences which there may be in the celestial bodies. their periods and revolutions, escape our sight and calculation. †

No more can the circular motion of the heavens be brought as an argument of their immutability; as if because a circular motion has no end, it should be adapted to an ever durable substance, for even the lower comets descend below the moon, and that from a force of their own, unless any one had rather give into that idle fiction of Aristotle, of their being tied to a

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* The late improvements made in telescopes, and other optical instruments, have enabled astronomers to discover such smaller objects, and variations in the heavens, as without such improvements, must have been still unknown. See Wolfi. *Element. Astronom.* passim.

star. And if men would argue for the eternity of the celestial bodies from their circular motion, the argument should be applied to the whole expanse of the heavens, and not to their parts; for the air, the sea, and the earth, are eternal in their entire masses, but perishable in their parts. On the contrary; supposing the rotation of the heavens, their eternity cannot be thence collected, for their motion is not perfectly circular, or such as restores itself exactly in a circle, but has it declinations, curvatures, and spirals *.

Again, if any one should retort our own argument, which asserts the changes happening in the earth to be accidental, or proceeding from above, and maintain the case to be otherwise in the heavens, which can by no means suffer, in like manner, from the earth, whose influences must all fall short, without reaching to the celestial bodies; so that, probably, the heavens, being exempted from all hostile violence, are capable of eternity; as not liable to injury, or disturbed from any opposite nature: We acknowledge the force of the objection, for we pay

* But in the hypothesis of the earth's motion, things appear much more simple; though this, as was before observed, is no proof of the truth of that hypothesis.

no deference to the opinion of Thales, who would have the celestial fires fed and maintained by the vapours arising from the earth and ocean; for these vapours fall back nearly in the same quantity they ascended; are absolutely insufficient for recruiting both the earth and the celestial bodies, and, indeed, can, by no means, rise so high. But, however the material effluvia of the earth may fall short of rising to the heavens, yet if the earth should, according to the opinion of Parmenides, and Talesius, be the primary cold body of nature, it is not easy to say, with certainty, to what height this unfriendly and rival virtue to the heavens, may insinuate itself, gradually, and by succession; especially as subtile bodies imbibe, and long preserve the nature and impression of cold and heat. But granting the heavens not to be affected by the earth; yet the celestial bodies may suffer and be changed by one another; as the sun by the fixed stars; the fixed stars by the sun; the planets by both; and all the stars by the æther they float in, especially on their surfaces. *

* Sir Isaac Newton shews, that the fixed stars, on account of their immense distance, can have very little force in disturbing the planetary system by their gravity; which is also balanced or destroyed by their mutual action every way

The notion of the eternity of the heavens seems to receive much countenance from that machinery and architecture which astronomers have busily introduced. They have been extremely careful that the celestial bodies should be subject to nothing more than a simple rotation; and, in all other respects, remain quiet and undisturbed. Hence they have, as it were, nailed down each star to its orbit; and for their declinations, retrogradations, &c. they make so many perfect rings, of a proper thickness, and turn and polish both their concave and convex sides so exquisitely, as to leave no roughness thereon; but adapt and fit them to one another, in such a manner, as to make them slide smoothly and equably, without stickage. And this kind of grooving and machinery is an ingenious contrivance for eternity; as it removes all violence and disorder, which are the inseparable forerunners of corruption and destruction. For, doubtless, if such vast bodies as the globes of the stars, were to cut through the æther, and not

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on one another: But may not some small effect be wrought by the light of the fixed stars upon the planets? See Newton. Princip. Lib III, Prop. XIV. and Mr. Boyle's Apology for Astrology, in his Memoirs for a General History of the Air.

remain continually in the same parts thereof, but sail through various portions, and very different tracts of it; as they sometimes mount upward, sometimes descend downward, towards the earth, sometimes tend to the south, and sometimes to the north; there must be great danger of numerous impressions, shocks, fluctuations, and mutual commotions in the heavens; upon which would follow such condensations and rarifactions of the celestial bodies, as might pave the way for new generations and alterations †. And as it appears from physical reasons, and also from the phænomena themselves, that this latter is plainly the case in nature, and that the above-mentioned machinery of the astronomers is but a fiction, or a mere empty imposition upon nature; the same judgment may be likewise passed upon the opinion of the eternity of the celestial bodies, which is joined therewith, and built upon it.

But if any one should here attack us from religion, we answer; It is only the heathen arrogance that attributes this eternity to the heavens

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* This description seems exactly to suit the comets, which move in all directions through the planetary regions; and may occasion very great changes, in numerous respects. See Dr. Hook's Discourse of comets.

alone; whereas the scriptures attribute it both to the heaven and earth; for we not only read that the sun and the moon are eternal and faithful witnesses in heaven, but also, that generations shall come and go, but the earth endure for ever; whilst of the frail and perishable nature of both, it is at once said, the heavens and earth shall pass away, but the word of the Lord shall not pass away *.

If any one shall still insist, though it cannot indeed be denied, that infinite changes do happen on the surface of the earth, and the parts adjacent, but not after the same manner in the heavens; we answer, that we do not compare them together in all respects, and yet to take those called the upper and middle regions of the air for the surface or covering of the heavens, as we do that upper part, or crust, wherein animals, plants, and minerals are contained, for the covering of the earth; there will also be a great variety of generations found therein. And thus all kinds of tumults, conflicts, and disorders, may seem to have place only in the confines of the heavens and earth; as we see in political govern-

* See the arguments drawn from revelation, for or against any astronomical system, briefly considered in Wolfius's *Elementa Astronomiæ, Schol.* 4, 5, 6, pag, 503, 504.

ment, it frequently happens, that the frontiers of the two kingdoms are infested with continual incursions and outrages, whilst the heart or more central provinces of each enjoy a continued peace, or are only now and then molested with destructive wars.

As to that other kind of heterogenity, consisting in a denial of heat to the celestial bodies, invented by Aristotle, to prevent the conflagration of Heraclitus, and making them only heated by accident, in rubbing against and beating the air, we are at a loss to know what Aristotle could mean by thus forsaking experience, and running opposite to the consent of the ancients. But it is no new thing with him to snatch a single instance from experience, and immediately to insult nature with it, in the manner of a bravo*. But we shall say more to this point under the question, Whether the stars are real fires: proposing, however, to treat it more accurately and at large, in our directions for the history of the cardinal virtues of nature, where we shall explain the nature and origin of cold and heat, a subject hitherto unknown and un-

* Perhaps no commentator ever understood Aristotle's works better than our author.

touched *. Thus much may serve to the state of the question, as to the heterogeniety of the heavens. Perhaps, the nature of the thing might require that Aristotle's opinion should here be condemned, without farther delay; but it is not our present business to pass sentence.

Let the second question be, What are the contents of the interstellar spaces? For they are, (1.) either empty, as Gilbert imagined, or, (2.) filled with a body, which may be to the fixed stars, as air is to flame; or, (3.) filled with a lucid body, homogenious to the stars, though of a less bright and vibrating nature. This latter seems to be the common opinion, in making the stars the densest part of their own orbits; for a less lucid body may be transparent, and transmit a stronger light; since, as Telesius accurately observed, even the common air may hold some light, because there are certain animals that see by night, whose eyes are fitted to

* The history here intimated was never published; we may, however make some conjecture what it would have been from the *Sylva Sylvarum*; the History of Winds, Life and Death, &c. Mr. Boyle seems to have had a direct view to supply it, which he has done in some measure, by his History of Cold; but his Enquiry into Heat was unfortunately lost. See Dr. Hook's Lectures of Light.

receive, and be affected by, a very small degree of light; for it is not so probable, that the act of vision should be performed without light, or from the bare internal light of the visual spirits *. Flame itself also appears transparent, so as to transmit the image of an opaque object; as we see by the wick of a burning candle, and much easier might it transmit intenser light than itself. Again, some flames are paler than others. This proceeds either from the nature or quantity of the body inflamed; for the flame of tallow or wax is more luminous and fiery, than the flame of spirit of wine, which seems somewhat more opaque, and, as it were, ærial, especially when in a small quantity, so as not to thicken itself. And to this purpose we have made an experiment, by causing spirit of wine to burn around a flaming taper, where it was easy to perceive the flame of the wax candle shining white, through the mist of the weaker and more dusky flame of the spirit of wine. In the like manner we frequently see shining gleams shooting in the air, that of themselves afford a manifest light, and remarkably illuminate or dissipate the darkness of the night; whilst at the same time

* See Sir Isaac Newton's Opticks. Quer. 16. pag. 321. &c.

we perceive the stars clear through the bodies of these gleams.

But this difference between the fixed stars and the interstellar æther is not well defined by rarity and density, so as to make the star dense and the æther rare; for here below, flame is generally a more subtile and more rarified body than air; and the like may probably obtain in the celestial regions. But it is a gross error to conceive the stars to be a part of their own orbits, and, as it were, nailed on to them, which confounds the fixed stars with the others. This is no more than a fiction; for the stars in their course must either cut the æther, or the æther revolve with them. For though they should move obliquely, they must necessarily float through the æther. And we have above observed, that the mechanical notion of contiguous orbs framed together, so that the concavity of the superior orb should receive the convexity of the inferior, as in a polished groove, without hindering each other's revolution, has no reality, whilst the body of the æther is one continued thing, like the body of the air; only because there is a great diversity found betwixt them with regard to rarity and other properties, it is convenient to distinguish them into different regions, for the sake of information and clearness.

Let the present question, therefore, be considered, as we have here explained it *.

Next follows a complex question concerning the substance of the stars; wherein we are first to enquire, Whether there are any other globes of solid and compact matter besides the earth? For it may be justly conceived, that nature, in the distribution of matter, did not work up the whole stock of compact body into this single globe of earth, whilst there appears to be so large a number of others, consisting of a rarer and more expanded substance. Gilbert has indulged this thought so immoderately (though some of the ancients were before him in it) as to assert not only the earth and moon, but numerous other solid and opaque globes to be diffused among the shining ones, through the vast expanse of the heavens. He likewise supposes, that even the shining globes themselves, as the sun, and all the brightest stars, consist of a cer-

* It is before observed, that Sir Isaac Newton has shewn the interstellar spaces contain but a very subtile matter; or else that æther, allowing its existence, makes no considerable resistance to the planets and comets continually floating in it. But what this æther is, has not been hitherto satisfactorily shewn by induction; though there seem to be a considerable number of experiments and observations, made by the moderns, which, if duly laid together, might afford some light in this matter. See above, Sect. I.

tain solid, though more shining and equable matter; thus confounding original light with secondary light or splendour, which is only light reflected:* for he also imagined, that our sea, did, of itself, dart out light, to a considerable distance. The same author acknowledges no globes of other than solid matter; and the atmospheres about them, he supposes to be only the subtile parts or effluvia thereof; whose expansion, at length, ceasing, leaves the unpossessed space a vacuum.

And, certainly, the supposition of the moon's being a solid and material body, may justly require a very diligent and serious enquiry, from those who desire to search into the works of nature: For the moon does not transmit light, but reflect it; has, in a manner, no light of her own; and is full of inequalities: Which are all properties of a solid body. And we see, that both the æther and the air, which are rare bodies, receive the light of the sun; but not reflect it as the moon does.† And the rays of the sun are so

* See the table of Enquiry into light and splendor, towards the beginning of the *scala intellectus*. See also, Dr. Hook's Lectures of Light.

† Let it be remembered, that light is not visible in the rays of light themselves, for a beam of the sun being admitted into a dark room, has no effect on the eye; but only

active, as to penetrate and pass through the densest clouds, which are of an aqueous substance; but they do not thus pass through the moon. The moon, however, is observed, in eclipses, to have some little obscure light;* but in the new moon, the increase, and the wane, there is none found; except on the part illumined by the sun. Again, impure and turbid flames, such as Empedocles supposed the moon to be, are certainly unequal; though then these inequalities are not fixed but generally moveable: Whereas the spots, and dusky parts of the moon, are thought to be constant. Add to this, that these spots in the moon are also found, by the telescope, to have their lesser inequalities; so that the moon is now certainly known to be variously figured: And that geography, or map of the moon, which Gilbert conceived in his mind, may now, by the industry of Galilæo, and others, seem to be actually making.†

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as it is reflected by the particles of dust or effluvia, continually floating in the air. See *Newton. Princip.* Lib. III. page 467, and Opticks, passim.

* Suspected owing to her atmosphere. See the late astronomers; but particularly Wolfii. *Elementa Astronomiæ*, p. 467.—472.

† And is now actually delineated by the labours of Hevelius, in his Selenographia, and by others. See Wolfii. Elem. Astronom. page 470, &c.

But if the moon really consist of a certain solid matter, like the earth; let it next be considered, whether she be the only celestial body of this kind: for Mercury also, is sometimes found in conjunction with the sun, as a little spot, or minute eclipse, of that luminary.* But those very black spots found in the southern hemisphere, as fixed and constant as the milky way, may give us still farther suspicion, that there are opaque globes, even in the higher parts of the heavens: for it seems improbable, that the heavens in those places should be thin, and, as it were, perforated; because such a decrease and want of visible matter, could by no means strike the sight at that distance: whilst, at the same time, all the rest of the æther is invisible to us, and undistinguishable; but by comparison with the bodies of the fixed stars. It should seem probable, that these blacknesses are owing to a defect of light; because there are few stars found in that quarter of the heavens: as, on the other hand, there are more observed about the milky

* Every one knows, that all the planets, with their satellites, are, in the present system of astronomy, allowed to be a kind of earths; and the comets themselves a kind of planets. Sir Isaac Newton's determination of their motions and situations, from the law of gravity, is a great presumption for the truth of this supposition.

way; which, therefore, appears continually luminous; as the others appear dark. For the celestial fires seem placed nearer together in the southern hemisphere, than in the northern; or the fixed stars to be there fewer, and the spaces between them larger. But the account of these spots is not hitherto well verified; at least, the diligence used in observing them has not been so considerable as to allow of consequences to be drawn from it.*

It comes closer to the present enquiry, that there may be more opaque globes, dispersed through the æther; though no way visible: for the moon in her first and earliest appearance, strikes the eye, from the side illumined by the sun, with a thin rim, or external part of a circle; but remains invisible in the other part of her face; or undistinguishable from the æther: and the satellites of Jupiter are drowned from the sight, like little invisible islands, by the ocean of æther they float in. So, likewise, if that infinite number of small stars which now set thick together, make the milky way, were placed separate,

* For a farther account of these particulars, consult father Noel's Observationes Mathematicæ & Physicæ in India & China factæ. Wolf. Elem. Astronom. 420, 421, 594, 595, &c. and the Philosophical Transactions. Lowth. Abridg. vol. i. p. 247, &c.

and at a distance from one another, they would perfectly escape our sight; as numberless others do, which shine in clear nights; especially in the winter season. Thus, again, many nebulous stars* are now distinctly numbered, by means of the telescope; which has also actually discovered dark parts, spots, and inequalities, in that pure fountain of light the sun.† And, certainly, if nothing else, yet the gradation observed among the stars in point of light; descending from such as are most clear and bright, to such as are dusky and obscure; may persuade us, that possibly there are globes perfectly opaque: for, the degree from a nebulous star to an opaque body, seems to be less than from the brightest star, to a nebulous one. Besides; the human sight is plainly limited, and deceived: for whatever is dispersed in the heavens, that has no remarkable magnitude, nor affords a strong and vivid light, lies concealed from us, and alters not the face of the heavens.

And let no unskilful person be here surprised at putting the question; whether globes of compact matter may hang and float in æther? for

* For these, consult the authors last mentioned.

† See the Philosoph. Transact. French Memoirs, Wolfius, &c.

the earth itself floats pendulous in the midst of its own soft bed, the atmosphere: and vast masses of watery clouds, and mountains of snow, hang in the regions of the air; and are thence rather precipitated, than suffered to descend, before they approach near the earth. Whence Gilbert very well observed, that heavy bodies removed to a vast distance from the earth, gradually lose their motion of descent; which motion has its origin from no other appetite of bodies, than that of coming to and associating with the earth, which is the mass of bodies of its own nature.* And this motion is terminated within the sphere of its own activity, for as to what men talk of a motion to the earth's centre, this were to make a mere nothing have an active virtue, and attract all things to itself; whereas one body can never be acted upon, but by another.†

This question, therefore, concerning opaque and solid globes though it be new, and may sound harsh to vulgar ears, should be received into our history of philosophical astronomy, and

* This is only, in other words, expressing the motion of gravitation to the earth.

† This seems to be the same doctrine as Sir Isaac Newton intends, when he endeavours to assign the cause of gravity; by means of a subtile matter. See the queries at the end of his opticks.

coupled along with that other ancient question, hitherto undetermined; viz. Which of the stars afford an original light of themselves: and which receive their light from the sun? The determination of this question will range the stars into suns and moons. To these two questions should likewise be annexed the enquiry into the different substance of the stars, in respect of each other: for their substance appears to be various; some being found constantly and manifestly reddish; others livid, others white, others bright and shining, others nebulous, &c.*

Let the fourth question be this: are the fixed stars actual fires? This question requires to be prudently stated, and distinctly understood: for it is one thing to say, that the fixed stars are real fires; and a very different one, to say that they have all the virtues, and produce the same effects as common culinary fire. We do not here mean any notional or imaginary fire, that retains only the name, without having the properties of fire: for if our common fire were to be placed in

* This is done in a very agreeable, geometrical manner, by Wolfius in his *Elem. Astron.* so far as the present discoveries reach. Thus all the planets and comets are made moons to the sun, in the solar system; and all the fixed stars probably shewn to be suns, with their several moons about them.

the æther, in such a quantity as it is in a fixed star, it might produce different effects from what we find among us here below. All nature have very different virtues; not only according to their quantity, but also their situation, with respect to other things. For the larger masses of matter, or bodies of the same nature, which are collected together, in such a quantity as bears some proportion to the sum of the universe, have certain cosmical virtues in their wholes, that are no way found in their parts. Thus the ocean, which is a huge collection of water, ebbs and flows; but ponds and lakes have no motion of this kind. So again, the whole body of the earth hangs pendulous; but small portions of the earth drop and fall downwards. Whence the situation of a thing is of the greatest moment, in every respect, both in the larger and smaller portions thereof; by reason of agreement, or disagreement, of the things which lie contiguous or adjacent to it. *

But there must necessarily happen a greater diversity between the fire of the fixed stars, and our fire below; because they differ not only in situation, but somewhat also in substance: For

* See this doctrine more largely explained by Mr Boyle, in his Cosmical Qualities, and Cosmical Suspicions.

the stellar fire is pure, entire, and native; but our fire is degenerate; and, like Vulcan thrown from heaven to earth, proves lame with the fall. Thus, to observe it closely; fire, with us, seems to be out of its own situation; trembling, surrounded with its opposites, needy, and requiring a constant supply of aliment to preserve it from sudden perishing: Whereas, in the heavens, fire seems, in its due and natural situation; separated and removed from all opposite violence; constant in itself; preserved by things of its own likeness; and performing its proper operations, free and unmolested. Patricius, therefore, had no occasion, for solving the pyramidal form of flame, as it is found among us, to feign, that the upper parts of the stars opposite to the æther might be pyramidal; though the lower parts opposite to us are globular: For this pyramidal figure of flame is only accidental, and proceeds from the pressure and constriction of the air upon it; which thus squeezes it from the round figure it has about its own fewel, and gradually forms it into a pyramid: Whence flame becomes broad at the basis, and sharp at the vertex; contrary to what happens in smoke, which appears like an inverted pyramid; because the air receives smoke, but compresses flame. Hence it

should seem probable, that as flame is pyramidal here below, it is globular above. *

So likewise flame below is a momentary body, but in æther permanent and durable; and even with us, flame might remain, and subsist in its own form, were it not destroyed by the bodies which surround it; as manifestly appears in large flames: For flame situated in the midst of, and totally surrounded by another flame, is not destroyed; but remains in a rapid motion, numerically the same, and unextinguished. The violation of flame begins from the sides; and thence proceeds its suffocation. And that an internal flame will permanently continue of a globular figure, whilst an external flame plays and vanishes in a pyramidal one, may be experimentally demonstrated, in two flames of different colours. †

There may likewise be a great difference in the heat of the celestial and terrestrial flame: For the celestial plays, and spreads itself with ease and freedom, as in its own proper sphere;

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* See Dr. Hook's Lectures of Light, passim.

† For instance, the white one of wax, or a proper composition of camphire, surrounded by the blue one of spirit of wine.

whilst the terrestrial is bound down, burns and rages, as in a sphere not its own: For all fire burns the stronger for being pent up, and imprisoned; and even the rays of the celestial flame, after they arrive at more dense and stubborn bodies, deposite their gentleness, and become more violent and scorching. Aristotle, therefore, need not have been afraid that Heraclitus's conflagration would fire his world, though he had allowed the stars to be real fires. * This question, therefore, may be received according to the explanation here given of it.

The next question may be this. Do the stars receive nourishment, increase, diminution, generation, and extinction? It is certain, that some of the ancients imagined, from rude and vulgar observation, that the stars were nourished, like fire; and fed from the waters, the ocean, and moisture of the earth; or recruited by the vapours and exhalations thereof: But this notion is unworthy of being made the subject of a question. For, as we before observed, such va-

* The author's experiments and discoveries upon the subject of light, fire and flame, though he has no where prosecuted the enquiry, as he intended, seem to lay the foundation, whereon Dr. Hook, Mr. Boyle, and Sir Isaac Newton have since proceeded, See, in particular, Dr. Hook's Lectures of Light.

pours never reach any thing near the height of the stars; nor is their stock, by any means, sufficient to recruit the waters here below, refresh the earth by rain and dews, and at the same time nourish and feed such vast numbers, and such huge masses, as the celestial globes: whilst it is manifest that the earth and the ocean have not visibly lost of their moisture for so many ages; whence there seems to be as much returned back as was raised in vapour. *

Nor do the stars require to be nourished after the manner of our fire. For where matter is lost, and wasted, something of the like kind is supplied and assimilated; which kind of assimilation has its origin in bodies, from their being surrounded with things contrary to, or unlike, themselves: But nothing of this kind can be supposed to happen in the internal and similar parts of the fixed stars; no more than in the lower parts of the earth; which also seem not to be nourished, but preserve their own substance by identity, and not by assimilation. But concerning the outward parts of the bodies of the stars; it is a proper question, Whether they remain in the same constant tenor, without prey-

* See this matter considered by Sir Isaac Newton, Princip. Lib. III. page 473.

ing upon, and some way tinging the æther they float in. And in this sense let the question be put concerning the nutrition of the stars. *

To the foregoing question may be properly annexed another concerning the increase or diminution of the stars in their entire bodies; though there are but very few phenomena to occasion the doubt. For first, there is no example, nor any thing of the like nature, found here below, to countenance the question; since our own terraqueous globe appears to receive no remarkable increase or diminution in its whole; but preserves its bulk and quantity, uniformly and entire. And though the stars appear to our sight, sometimes greater, and sometimes less, in their bodies; yet this alteration of their size may be owing either to their greater or less distance from the earth, as in the apogeés and peregées of the planets, or to the disposition of the medium. † But the alteration here caused by the disposition of the medium is easily distinguished, because it affects the appearance of no single star, but the appearance of them all equally; as

* See the Question discussed by Dr. Hook, in his Lectures of Light.

† See some uncommon observations made to this purpose in Wolf. *Element. Astronom.* page 594, 595.

we find in frosty nights, when all the stars seem larger on this account, that the vapours rise more sparingly, or are more forcibly held down, than whilst the entire atmosphere is somewhat condensed, and brought a little to an aqueous or christalline nature, which magnifies objects *.

And if any particular vapours should interpose between a star and the sight so as to magnify that star, which frequently and manifestly happens in the sun and moon, and therefore may do the same in the other celestial globes, yet this appearance cannot deceive us, because such alteration of magnitude does not continue, or follow the star in its motion; but the star soon gets clear of it, and recovers its usual appearance. There has, however in ancient times, and again in our own, happened a great and most remarkable change and renovation in the planet Venus, both as to magnitude, colour, and figure †. Since therefore the change which constantly and regularly follows a star, and re-

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* Compare this with Sir Isaac Newton. *Princip.* lib. iii. p. 467, &c. and the modern doctrine of refraction. See Wolf. *Elem. Astronom.* cap. vii. *De Refractione et Parallaxi Fixarum.*

† That Venus is horned, or has the same phases as the moon, is now commonly know and allowed. See Wolf. *Elem. Astrom.* p. 480, 481.

volves along with its body, must necessarily be in the star itself, and not in the medium; and since, through a neglect of observation, many things that do visibly happen in the heavens may escape us, we judge it proper to receive this part of the question into our history.

The other part of the question, viz. Are the stars generated and dissipated in a long series of ages? is of the same kind, but countenanced by a greater number of phænomena, though of one kind only. For as to all the old stars, there is no mention made of the first appearance of any one of them, through all the ages of the world; excepting only that idle story of the Arcadians about the moon: nor, to this day, is there any one wanting of their number. But for the comets, which both in their form and motion resemble the planets; they seem to be perfectly new stars, whose appearances and disappearances we have ourselves seen, as well as received from the ancients. (1.) Some imagine these comets to be spent and consumed in time: (2.) Others judge them to be rarified and resolved into æther; (3.) Others, that they only absent themselves for a season, and return again; and (4.) others, that they appear to us only in their perigées, or near approximations to the earth, and then go back again from our sight to

the higher regions of the heavens in their apogées. But this entire question concerning the first appearance of new stars, we assign to that place which treats expressly of comets *.

There remains a seventh question concerning the milky way; viz. Whether the milky way be a collection of minute stars, or a continued body and part of the æther, of a middle nature, betwixt stellar and æthereal? The opinion that the milky way was an exhalation, is long since exploded, to the merited reproach of Aristotle; who dared to impose a transitory and changeable nature upon so fixed and constant a phænomenon. And indeed the question at present, seems to be decided by Galilæo, who has divided that confused tract of light into distinct and small fixed stars. For that the milky way should not intercept the sight of the other stars betwixt it, does not determine the point; nor incline the question either way. Only it may, possibly, intimate, that the milky way is not placed lower than the sphere of the fixed stars; for if it were,

‡ The author, we see, designed to have treated the question of comets; but I find it no where among his works. He seems to have had a foresight of the present cometary, as well as planetary system. And, for the present system of the fixed stars, he had it in great perfection. We observed in our preface, that the piece is imperfect.

and a continued body of some thickness, it probably would intercept the sight. But if placed at an equal height with the fixed stars that seem to appear through it, doubtless there may be stars in the milky way, or in some other parts of the æther. We therefore receive this question, that the point may be fairly decided*.

The questions for determining (1.) the number, (2.) the magnitudes, (3.) the figures, and (4.) the distances of the stars, abstracted from the phænomena and historical questions†, which we shall hereafter propose, are little more than simple philosophical problems‡. Thus with regard to the number of the stars, let it be enquired, Whether there be so many of them as there appears to be, or more? and compare them with the catalogue carefully made by Hipparchus, and laid down in their places on the celestial globe. For it is but a superficial reason which is offered for the appearance of an innumerable multitude of latent or skulking stars, on clear and frosty nights, that this phænomenon

* See Wolf. *Elem. Astronom.* cap. viii. *de Stellis fixis et novis, atque Cometis.* Particularly Observation 36.

† Observe, that the author calls an account of facts by the name of History, which we now often call by the name of Observations.

‡ But these are wanting.

should not be owing to the existence of any smaller stars, but only to the shining, sparkling, and vibrating motions of those already known. Galilæo has discovered new nations of little stars, not only in the milky way, but also in the region of the planets themselves. And stars may be invisible, not only by the smallness of their bodies, but also by their opacity; and again by their elongation and distance from the earth. But we refer the question concerning the additional number of stars, from the generation of new ones, as we did that of their first appearance and disappearance, to the place where we shall treat of the comets.

(2.) As to the magnitude of the stars: their apparent magnitude is matter of observation; but their real one matter of philosophical enquiry. Let it therefore be sought, What is the real magnitude or dimension of each star, either absolutely or comparatively? For it is easier to discover and demonstrate that the globe of the earth is bigger than the globe of the moon, than that the globe of the moon is so many miles in circumference. But let the utmost endeavours be used to ascertain their precise magnitudes; and if these cannot be procured, let their comparative magnitudes be noted. Their real magnitudes are to be had either from eclipses and

their shadows, or from the extent of their light and other virtues, which each body projects and diffuses, to a greater or smaller distance, in proportion to its magnitude; and again, from the proportion and symmetry of the universe, which, by a certain necessity, terminate and ascertain the limits of bodies of the same individual nature. But no great dependance, as to the real magnitudes of the stars, should be had upon the mensurations and calculations hitherto given us by astronomers; for though this has the appearance of great care and exactness, yet it is too licentiously and rashly undertaken; whence more genuine and trusty methods of proof should be diligently enquired after. The magnitudes and distances of the stars mutually indicate each other by optical proportions, though these require to be more thoroughly sifted and discussed *.

* Great accuracy appears to be used by the later astronomers, in procuring finished instruments for the business of observation; especially by Hevelius, Dr. Hook, and many others, since the institution of the Royal Observatories at Greenwich, Paris, &c. And upon a collection of observations made in this way it is, that Sir Isaac Newton builds his theory of the moon, and the whole solar system. But as our author observes of his own time, so still greater precision is, even at present, required in this matter. And, perhaps, if it were not amiss, if the mathematical philosophers would verify their observations, by the due use and im-

(3.) The question concerning the figures of the stars may be put thus. Are the stars real globes, or collections of matter into a solid and spherical figure? The stars to the eye seem to have three different figures; viz. (1.) one that is spherical and radiant, as the sun. (2.) spherical and cornuted, as the fixed stars; and (3.) simply spherical, as the moon. But here the radiancy and the angles regard only the sight; and the spherical figure only the substance of the bodies themselves. It is remarkable, that among all the stars there is none of an oblong, triangular square, or other polygon figure. And it should seem, as if all the larger masses of things naturally collected themselves into globes, for their own preservation and the exacter union of their parts †.

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provement of the physical method, here laid down by the Lord Bacon; for it is highly probable, that the best ways of making astronomical discoveries are not yet known. It is very seldom, that such eminent contrivers and inventors, as the Lord Bacon, Dr. Hook, and Sir Isaac Newton appear; and yet till many such geniuses shall have contributed all their stock, philosophy will not be perfect; unless men of more slender capacities could, as doubtless they might, be taught the art of inventing. See the *Novum Organum*, passim, and Dr. Hook's Method of improving Natural Philosophy.

† According to the modern discoveries, the sun, and all the planets, and comets, are spherical, or rather, according to Sir Isaac Newton, spheroidical.

(4.) Lastly, What is the true distance of each star in the depth of the heavens? For the side distances of the planets, as well in respect of one another, as of the fixed stars, are governed by their motions. And here, as we just now observed of the magnitude of the stars, if their exact distances cannot be had, at least, let their respective distances be adjusted. Thus, if we do not know the true distance of Saturn or Jupiter from the earth; yet this we should be certain of, that Saturn is higher in the system than Jupiter. But hitherto the planetary system is not settled, nor the order of the planets places, above one another, absolutely adjusted: the dispute still remaining with some, which is the highest Mercury or Venus * ?

The way of discovering the true distances of the stars is, (1.) by their parallaxes; (2.) by eclipses; by their respective motions; and (4.) by their different apparent magnitudes. But other assistances are to be procured for this purpose; and should be recommended to the future industry of mankind †.

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* See these particulars adjusted by the later astronomers, in Wolf. *Elem. Astronom.* passim.

† Certainly, the moderns have nobly prosecuted this grand enquiry; and yet we should not stand still, as if all were performed by Sir Isaac Newton, who has, indeed,

done wonders, but still proceed with vigour and alacrity, to farther discoveries, which himself directs, and has laid foundations for. Great geniuses are never satisfied with making new discoveries in their own persons; but always endeavour to lead mankind into the way themselves have trod, desiring to be outdone by posterity. And the greater the soul, the more it indulges this worthy appetite. Hence our author, in particular, seems to have wholly bent himself upon putting all things in the direct way of enquiry and determination, which is a near approximation to discoveries, and infinitely preferable to a few imperfect discoveries themselves, as teaching both the present and future generations, what particulars are to be chiefly regarded and sought after, for bringing philosophy to perfection.

END.

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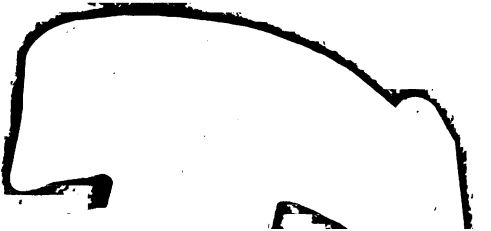
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